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A STUDY REPORTED WHAT HAPPENED WHEN PROGRAMED MATERIALS WERE MADE AVAILABLE TO ABLE STUDENTS ATTENDING SMALL HIGH SCHOOLS. FOUR HUNDRED STUDENTS FROM 20 HIGH SCHOOLS PARTICIPATED IN THIS PHASE OF THE PROJECT. A COLLEGE-LEVEL PROGRAMED COURSE IN FIRST SEMESTER INTRODUCTORY DESCRIPTIVE STATISTICS AND A COURSE IN HUMAN BEHAVIOR WERE GIVEN TO THE STUDENTS. IT WAS FOUND THAT, DESPITE AN ENTHUSIASTIC BEGINNING, LOSS OF EFFORT TOWARD COMPLETING COURSE WORK USING PROGRAMED MATERIALS WAS BOTH STEADY AND SUBSTANTIAL. (LP)

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Phase I --
1st year

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ED 010 269

PROGRAMMED INSTRUCTION FOR SUPERIOR STUDENTS IN SMALL HIGH SCHOOLS

TITLE VII - B

NATIONAL DEFENSE EDUCATION ACT OF 1958

CONTRACT NO. OE-4-16-026

(INTERIM REPORT FOR PROJECT YEAR NO. I)

PROGRAMMED INSTRUCTION FOR SUPERIOR STUDENTS IN SMALL HIGH SCHOOLS

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education
Washington, D. C.

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From their earliest beginnings the proposal and the project which came from it were enthusiastically and effectively supported by Dr. James Gemmell, President, Clarion State College, and by Dr. Norman Weisenfluh, President, Slippery Rock State College. After Dr. Weisenfluh departed from his position, his successors, Dr. John Edwards as Acting President and Dr. Robert S. Carter as President, continued the cooperation and interest which he had initiated.

With the approval of the United States Office of Education, the director of research and the two research assistants were employed to initiate, conduct, evaluate, and report the project.

Sincere appreciation is expressed to the high school teachers, principals, supervising principals, and superintendents of public schools for their cooperation throughout the classroom phases of the project. Without the extensive and effective assistance they gave, the project would not have been possible.

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CHAPTER I

STORY OF THE PROJECT

INTRODUCTION

The problem of providing adequate instructional programs for the able students who must attend relatively small high schools was the central concern of this project. Although this problem has steadily increased as a concern in all school systems, it has assumed unique characteristics when applied to the smaller school with its distinct limitations of staff, facilities, instructional resources, and number of students. In a day when the search for, the development of, and the maximum utilization of human talent has become a national concern of sufficient importance to deserve a basic position within significant legislative programs, continued failure to develop that to be found in smaller schools has become a point which has received an increasing amount of attention.

Because the small school within the Commonwealth of Pennsylvania has been conceived to be typical of similar schools throughout much of the nation, the following (selected) facts related to them have become basic points of the rationale which supported the proposal upon which this project was predicated:

1. Although thirty-three percent of all of the persons who graduated from high schools within Pennsylvania during 1962 entered four year colleges, the proportion of the same year's students who graduated from small high schools and who entered such institutions was twenty-six percent.

2. An example of this was the 1962 graduating class of a small high school within Pennsylvania, whose total senior class numbered fifty-four students. A total of nine individuals took the College Entrance Board Examination. The mean score which this group attained on the mathematics portion was one-half of one Standard Deviation below the national average.
3. The students mentioned in item 2, above, scored three-fourths of one Standard Deviation below the national average on the verbal portion of the College Entrance Examination Board's instrument.
4. A performance level similar to that mentioned in items 2 and 3, above, was achieved by the 1963 senior class of the same high school.

The above statements were selected because of the large amount of data which tended to support them and which were available in various places. Primary among these were the data concerning student performance within college courses that were found on the campus of Clarion State College. Communication among supervisors of student teaching and placement within the state colleges has indicated that this type of situation was both general and widespread.

Programmed materials have emerged as one of a number of means by which able students within any high school may profit from expanded and/or enriched educational content. These self-teaching materials have become a primary means whereby a student may proceed beyond the usual class-wide pace and extent and may do so at his personal pace and time. Because it has become possible to obtain quality programmed materials on the public market and because these have been carefully validated in terms of the quality and quantity of content taught, it has become possible to teach through their use in small high schools and in small and varied student groups.

This project was developed to observe and record what happened when programmed materials were made available to able students attending small high schools. On page 7 of the proposal, upon which the project has been based, the following procedures were listed as those which the project staff would implement:

1. Procure commitments from twenty public schools in the areas of Clarion State College and Slippery Rock State College.
2. Develop the protocol for the descriptive detailing required by the project. Finalization of administrative and supervisory aspects of the study.
3. Select and procure programmed instructional materials and testing instruments for use in the participating schools with approval of the United States Office of Education.
4. Identify pupils from project schools who will participate in the study.
5. Initiate and conduct the high school classroom aspects of the study in the fall semester, 1964.
6. Evaluate procedures and protocol following the first administration of programmed instructional materials.
7. Initiate and conduct (a program using) the second group of programmed instructional materials during the spring

semester, 1965.

8. Evaluate and report the study. The final report will contain carefully written and documented commentaries on such topics as:
    a. Anecdotal reports on observations of teacher and pupil behavior when exposed to the use of programmed instructional materials. (Included in Appendix D)
    b. Responses of able pupils to expanded opportunities which programmed instruction provides. (Indicated in Appendix A)
    c. Evidence of educational achievement which able pupils demonstrated by means of tests designed for the programs employed. (Included in Appendix A)
    d. Attitudes and behavior of pupils, teachers, administrators, and parents as determined by such techniques as: class visitations, interviews, questionnaires, and anecdotal reports. (These were based upon attitude scales and anecdotal records in Appendices A, B, C, and D.)

In addition to the above procedures, the original proposal also contained a list of seven questions which the writer believed to be pertinent to the use of programmed materials in the smaller public high school. Although the primary concern of the project was specifically stated to be student response and performance, answers were also to be sought to the following seven (pertinent) questions:

1. What will be the effects of this approach upon the school

administrators, teachers, and parents?

2. Will students and teachers take advantage of the opportunities of programmed instruction where no pressures are brought to use them?
3. Do attitude changes of any relevant kinds occur?
4. Do teachers begin to adjust their course content and teaching methods in the courses related to the programmed materials, e.g. mathematics materials - changes in the mathematics course?
5. Do programmed techniques begin to appear in courses not related in content to the programmed materials supplied?
6. Do teachers exhibit feelings of inadequacy or threat to their positions?
7. Do teachers request more information about programmed instruction, and do they request instruction in programming?

Fulfillment of the above procedures comprised the primary activity expended in behalf of this project. Evidence related to the students' response and/or performance was sought, analyzed, and evaluated through the statistical data and its treatment. Although possible answers to the additional seven questions were not a primary result of the statistical devices and processes, answers to those questions and/or parts of questions which could be obtained with the resources, staff, population sample, and time at the project's disposition became available through the anecdotal records which the two research assistants maintained (see Appendix D) and through a variety of communications which passed between the project office and the public schools that were affiliated with the project. (These are available in the Project Office.)

This project began on June 29, 1964, when officials of the United States Office of Education, Department of Health, Education, and Welfare, Washington, D. C., and Clarion State College, Clarion, Pennsylvania, concluded Contract No. OE-4-16-026. The activity which that contract initiated continued throughout the ensuing fifteen months and included all of the 1964-1965 academic year.

Slippery Rock State College, Slippery Rock, Pennsylvania, became a cooperating college for the project. This enabled it and Clarion State College to become the two respective state college bases from which a total of twenty cooperating public high schools were served.

DEFINITION OF TERMS

The following terms have been assigned specific meanings which applied to their use in this project:

1. Anecdotal Record - An accumulation of anecdotes obtained by means of daily entries concerning experiences or comments related to a specific aspect of the project.
2. Area I - The geographic region which surrounds Clarion State College and which includes ten high schools within the project.
3. Area II - The geographic region which surrounds Slippery Rock State College and which includes ten high schools within the project.
4. Attitude - A state of mind, behavior, or conduct which

indicates an opinion regarding the project and/or programmed materials.

5. Attitude Scale - An instrument which seeks to determine a respondent's attitude toward a selected aspect of the project.

6. Behavior - The manner in which a person acts under selected circumstances.

7. Categories - Various combinations of the six population groups which comprise the sample population.

8. College Entrance Test - An instrument administered to a student as a means of determining his eligibility to enter college. (Also called the C.E.T.)

9. Growth - Increase in the learning which a student possesses as indicated by his performance on achievement tests.

10. Indicators - Those scores obtained from student response and/or performance on selected development, attitude, and/or achievement instruments.

11. Liaison Person - Any member of a respective high school staff who served as counselor for project students within his school.

12. Mental Ability Test - A test designed to measure student's I.Q. (Also called M.A.T.)

13. Participant - A student who was selected and included in the project's student population sample.

14. Performance Data - Data which indicates the manner in which a student functions in respect to a selected activity or skill.

15. Personal Data - Data which describes an innate or acquired characteristic related to an individual.
16. Phase - A period within the project's conduct which is characterized by related activities and purposes.
17. Population Group - A portion of the project population sample.
18. Programmed Course - A course taught by a self-teaching type of text which permits the student to be relatively free from teacher-pupil and pupil-pupil relationships.
19. Programmed Materials - A self-teaching textbook(s) and/or related instructional aids.
20. Project Period - July 1, 1964 until September 30, 1965.
21. Project Staff - The group of persons responsible for the total conduct of this project. (This included two co-investigators, a director of research, two research assistants, and up to two office secretaries besides part time consultants and specialists.)
22. Research Assistant - One of two staff members responsible for the supervision of students within the project.
23. School Q.P.A. - The cumulative averages of quality point rating obtained from the participating high school for each respective student who became a part of the project.
24. Small High School - A high school whose graduating class (1964) contained less than 200 students.
25. Superior Students - Those whose respective ability, achievement records, and personal characteristics caused members

of local teaching staffs to consider them appropriate participants for this project.

PHASE I: JULY 1 - NOVEMBER 1, 1965

The initial phase of the project period endured eight weeks longer than had been anticipated when the proposal was developed. Difficulties experienced by Clarion and Slippery Rock State Colleges during their quest for staff members to conduct the project was a primary delay. The original proposal anticipated a complete staff on hand early enough to permit all preliminary preparations to be completed in time to initiate full scale project activity at the beginning of the 1964-1965 school year. Actual experience saw a delay in completing the basic staffing, the preparation of offices, the design of administrative and procedural policies, the selection of courses and materials, and the selection of high schools and students until late October. This factor mandated extensive realignment of schedules related to the project that were to become a part of the remaining portion of the project year.

Primary achievements during this initial phase of the project were:

1. The selection of twenty (20) public high schools to participate in the project.

   Twenty high schools were invited to participate on the basis of their size, type of community environment, and their respective locations with regard to geographic proximity to Clarion or Slippery Rock State Colleges. Ten high schools that were situated within the immediate service area of each of the cooperating state colleges were invited to participate, and they, in their turn, were requested to file letters of intent to participate with the respective state college.

The following high schools elected to participate. All were within the region embraced by Butler, Clarion, Forest, Jefferson, and Lawrence Counties.

a. Allegheny-Clarion Valley Joint High School.
b. Brookville Area Joint High School.
c. Clarion Area Joint High School.
d. Clarion-Limestone Joint High School.
e. East Forest High School.
f. Fairview Township-Karns City Joint High School
g. Keystone Joint High School.
h. Knoch High School.
i. Laurel High School.
j. Mars Area Joint High School.
k. Moniteau High School.
l. North Clarion County Joint High School.
m. Redbank Valley Joint High School.
n. Seneca Valley High School.
o. Shenango High School.
p. Slippery Rock Area High School.
q. Union Area Joint High School.
r. Union Joint High School.
s. West Forest Joint High School.

t. Wilmington Area High School.

2. The selection of 400 students to participate in the project.

   Each school was invited to nominate twenty (20) students who were members of grades 10, 11, and/or 12 during the 1964-1965 school year. The criteria to be used as guidelines for this selection were (1) achievement, (2) ability, (3) teacher recommendation, and (4) administrator approval. After a student had been nominated to participate by his respective school, it was required that he and his parents (or guardian) consent and that the project staff approve his participation.

   A total of 400 students were selected in the first phase of the project. In an attempt to counteract the loss of students because of moving from their respective communities, health problems, and inability to carry the added work, a total of 434 students became a part of the project at some time during the year.

3. The orientation of persons concerned with the project.

   The members of the project staff arranged two initial meetings for all high school administrators, public school superintendents, and county agencies for public schools as a first step in implementing the classroom phase of the project. These were held in each of the two participating state colleges, and they represented an attempt to communicate a number of primary facts, policies, procedures, and attitudes related to the spirit and to the letter of the project to the key persons within each participating high school. On each occasion the project staff members were effectively assisted and supported by key administrative officers from the respective state colleges.

During these two preliminary sessions the following points were considered and/or explained:

a. The orientation and motivation of project students.

b. The local school's responsibility to design, develop, and implement a program to acquaint the public, the parents, the school board members, and the local faculty with the project.

c. The initiation and maintenance of a liaison system by which the personal needs of individual participants could be effectively and punctually met.

d. Development of an acceptable policy and schedule whereby the services of the two research assistants could be made available to each participant without necessitating any interferance with the individual's regular school day routine.

4. The selection of programmed materials to be used for the project's activity.

The original proposal dealt with the selection of course areas as follows:

"The able pupils selected will be exposed to at least two programs, one during the first semester of 1964-65 and another during the spring semester of the academic year 1964-65. It is proposed that these be in the area of modern mathematics and English. The selection of areas will be finalized during the summer months after examining existing programs for validity and reliability. Programs to be used will be approved mutually by the Contractor and the Office of Education."

This was an additional instance in which the previously developed time schedule was unrealistic. Extensive study of the curricular offerings already in effect within the various participating high schools made it impossible to find valid and/or reliable programs in mathematics and English which would provide a uniformity in learning opportunity throughout the entire population sample. Prerequisite requirements for these courses were either totally impossible to meet, or they were unequally met among the respective high schools.

During the latter part of October the members of the project staff requested and received approval from the United States Office of Education to use a college level programmed course in Introductory Descriptive Statistics for the first semester. Although this course was not strictly in the mathematics discipline which the proposal had identified, it was capable of uniform application throughout the project in terms of prerequisite requirements, and it represented a new educational opportunity for all students in the population sample.

5. The acquisition of pertinent data related to each individual

student participant.

A series of decisions, which were made and implemented during this initial phase of the project, resulted in the availability of extensive and significant data related to each participant. A direct result of these decisions and of the extensive cooperation which local high schools gave the project staff was the provision of extensive and varied information concerning each participant when the project began: (1) grade level, (2) sex, (3) quality point averages, (4) I.Q. ratings, (5) college entrance test scores, and (6) a variety of special ratings on other selected instruments which were used by some high schools.

These initial data have been supplemented by those obtained from a variety of measurements utilized during the course of the project. Scores obtained from these instruments were processed by means of a series of statistical treatments which enabled project staff members to determine the impact which instruction by programmed materials has had upon the groups within the population sample. Evidence of change(s) brought about within each population group was studied in terms of the characteristics and of the potentialities of the respective group. A further significant step was to compare the various population groups with each other in terms of the changes and characteristics that had been identified.

Participants included in six classifications were studied as separate groups: (1) students enrolled in grade 10, (2) students enrolled in grade 11, (3) students enrolled in grade 12, (4) all boys included in the project, (5) all girls included in the project, and (6) all students within the project's population sample. These were studied by means of scores which were obtained by means of four testing (measuring) instruments:

a. A specially selected mental ability test that provided (1) raw scores, (2) percentile scores, and (3) I.Q. ratings for the language, the non-language and the combined language and non-language aspects of mental ability.
b. A specially adapted attitude scale which measured the student's attitude toward mathematics and which was used with the permission of the author and at the suggestion of one of this project's consultants.
c. A special scale to measure the student's attitude toward programmed materials which had been developed by a nearby university as a device to be used in another project that had been conducted with support from the United States Office of Education.
d. Achievement (unit) examinations which were a regular part of each of the programmed courses and which were the means of determining evidence of educational growth that resulted from the project's activity.

6. The design of a program of student supervision which would function throughout the project.

Each participating student was provided a minimum of one opportunity to confer with one of the research assistants from the project staff each second week. These opportunities were scheduled in advance and on a regular basis, and each student was aware of the time and place of his personal conference with the project's representative. If any student required unexpected assistance which his respective liaison teacher could not provide during the period between visits to his school by the research assistant, a special effort was made to schedule a special and immediate conference in advance of (and in addition to) the regular schedule which the research assistant was following.

The unit (achievement) examinations which comprised a part of the two programmed courses were spaced according to units of work completed. This caused them to be scheduled according to each individual student's respective rate of progress through the course. Administration of each test was usually the result of the student's request to his respective liaison teacher, and the test was then forwarded to the respective state college campus for scoring by a project secretary. Usually the corrected test was returned to the student's school during the next visit of the research assistant, but when this would constitute too long a delay, the test was returned to the liaison teacher by mail.

All unit tests and special attitude scales were scored by a secretary in the respective state college's project office. The answer sheets for the mental ability tests were machine scored by the testing agency that had provided the test which was used.

Phase I of the project period officially closed during the last week in October. During that week the initial shipment of programmed materials, those included in the Introductory Descriptive Statistics course, reached Clarion State College. The week was occupied with the distribution of these materials to each school and to each participating student within each school.

The extensive and significant cooperation and interest of appropriate representatives of the publishers of this course contributed significantly to the implementation of the project within an extremely short period of time.

PHASE II: NOVEMBER 1, 1964 - FEBRUARY 15, 1965

Although Phase I had seen many baseline decisions and general policies carefully developed and communicated to all who should have been concerned with any aspect(s) of them, it was Phase II which put all of these to the actual test of practical application. As this was done, the members of the project staff experienced a steady increase in the number of instances where revisions in previously developed policies and procedures and where new and unexpected decisions and/or policies had to be developed, communicated, and implemented. Usually these were required within very short periods of time, and the distances between the colleges and between the state colleges and their respective cooperating high schools further complicated these tasks.

Much of the statist[illegible], and of the anecdotal information which can be found in Appendix A and in Appendix D, respectively, of this volume was obtained during this phase of the project. All of the data related to student's attitude toward mathematics and to achievement tests for this first course, Introductory Descriptive Statistics, were obtained during this period.

Specific developments which have proven themselves to be of primary importance to the project and which were a part of Phase II follow:

1. The clarification of fiscal procedures to govern the use of project (grant) funds.

   As soon as officials in Clarion State College had received word that the United States Office of Education had agreed to the financial support of this project, they had recognized the need to clarify the procedures for utilizing these funds while fulfilling the fiscal requirements that apply to a state college within the Commonwealth of Pennsylvania. Through the cooperation of officials within the State Government in Harrisburg a system that has proven itself workable was developed early in November. As soon as this was done, it paved the way to process payment for materials and services which had been carried by means of credit to that point. In these cases the guarantee of the state college officials and/or of the personal word of the project staff had been accepted by the respective vendors.

2. The selection of a course and a program to constitute the second semester's work.

When the decision was made to utilize the Introductory Descriptive Statistics course during the first semester, it was decided to explore a variety of possibilities for programs to be used during semester two. This exploration revealed a new two-part program in Human and Social Behavior which was then under development. It was expected to be available in pre-publication (testing) form during semester two. The combined program would provide an introduction to four areas of curricular content that were not usually a part of a high school course: (1) anthropology, (2) psychology, (3) sociology, and (4) philosophy.

When the publisher was contacted, permission to use a specially adapted version for the high school students in this project was granted. The project staff and the United States Office of Education approved the use of these two volumes as the second program in this project. Because of the developmental aspects of the programs, it was necessary for the research staff to utilize a general group of 120 testing questions for each respective volume as the contents of specific unit examinations and to reproduce those unit examinations by means of mimeography.

3. The official designation of a test of mental ability.

   Extensive study of mental ability tests which were available on the open market led the staff to an awareness of a special restricted test which was primarily designed to serve high school students seeking scholarship assistance for college attendance. When the publisher was contacted, permission was granted to use the restricted form for the students in this project, and necessary orders for materials and scoring services were placed.

The data obtained from this test have been included in Appendix A of this volume.

4. The maintenance of morale throughout the project period.

The basic design of this study was developed from the concept that, in the typical public school classroom, the superior student may exert comparatively less effort to achieve than does his less able classmate. This concept led to the development of this project's activity as an opportunity for an able student to proceed beyond the limits of educational growth found in the regular classroom situation. It was predicated upon the assumption that an able student could complete all that a normal schedule required of him and acquire additional learning by individual effort within this project's programs.

Although the above theory appeared sound, the problems of time and mental and physical energy became very heavy. Its characteristic symptom was a general feeling of discouragement and retarded progress in the programs.

During the month of January the problems related to student morale first became a major concern for the project staff. At the time it seemed to develop at a pace and within a pattern which suggested three major causes:

a. A middle-of-the-year (post-Christmas vacation) press of activities and of regular school courses.

b. Student tendency to become discouraged because of the amount of work remaining in a course which was started one-half of one semester late.

c. A spottiness in the dropout pattern which caused very heavy dropping out in selected schools as compared to others. This seemed to indicate a tendency for students to follow the example of others with whom they had school day contact.

5. The impact of parental attitudes upon the progress of project students.

During this period the two research assistants began to receive indications that parents were becoming active in determining student attitude. As the midyear examinations approached, some indicated that they felt their children should concentrate on regular class work and reduce, or entirely eliminate, their attention to the programmed course. As nearly as could be determined there was no real need for this concern because high grades were being maintained in the regular courses.

6. The termination of the first course of study.

Largely because of items 4 and 5, above, the members of the staff decided to prolong the time devoted to the course in Introductory Descriptive Statistics beyond the close of the first semester. It was terminated at the end of February, and although the raw data to be found in Appendix A indicated that much more could have been achieved than was the case with this course, the extension of time did increase the work that was finally completed over what it would otherwise have been.

7. The administration of the test for mental ability.

   Phase II of this project closed with the two research assistants in the midst of administering the mental ability (maturity) test to all of the project students who were a part of their respective areas of the project. The beginning weeks of Phase III found them completing this task as a means of attaining project-wide uniformity in the administration of the instrument.

PHASE III: FEBRUARY 15 - JUNE 10, 1965

This phase of the project saw the completion of the academic year and of the final collection of all ability, attitude, and achievement data by the two research assistants. It embraced all of the time which was allocated to the use of the second programmed course as a part of the project. It culminated in the termination of the immediate classroom activity for the project and in the beginning of the processing of all data in the Computer Center, Clarion State College.

Primary developments related to this portion of the project included:

1. The initial activity related to data processing.

   In late February the data for the instrument to measure Attitude Toward Mathematics was submitted to the Computer Center, Clarion State College. It then became the material with which initial (experimental) processing was carried out. This experience became the basis upon which all subsequent types of data were organized and processed.

2. The student use of the second program, Human Behavior.

   Early in this portion of the project period it became apparent that, for the vast majority of the project students, the depth of content in the new program coupled with the relatively late termination of the first course would preclude the use of more than one of the two programmed texts which had been selected for semester two before the close of the school year. Although it had been anticipated that a higher interest level and a less technical nature of the content would lead to faster progress through the content of the second semester's program as compared with the progress through the earlier program, this did not prove true. Except for highly exceptional students and for those who voluntarily elected to work on their own through the summer vacation period, the second programmed volume in the behavior series, Social Behavior, went unused, and its copies remained a part of the project office's inventory of materials.

3. The use of special meetings of key state college and public school persons.

   In late February a second pair of meetings took place. These included the high school principals and the public school administrators whose responsibilities included one of the project high schools within the respective state college areas. The specific purposes served by each of these two sessions included the following:

a. An opportunity for the persons responsible for the local units of the project to provide personal reaction to the conduct of the project and its results within their respective high schools.

b. An opportunity for the members of the respective state college and project staffs to identify and evaluate local school reaction to selected (key) aspects of the project.

c. An opportunity for college and project employees to identify potential schools and curriculum areas to which the use of programmed materials may be extended from those covered by this project. (Staff members were requested to suggest amounts for programmed materials that would enable this type of program to become a permanent part of the basic school program.)

The second pair of these meetings was conducted on each of the two state college campuses during the middle part of May. They included the persons from the participating high schools who had served the project as the local liaison persons to whom the project students looked for day to day assistance, advice, and special testing services. From these two meetings came specific comments and/or suggestions:

a. There was a strong feeling that students other than those who were able ones could be served by means of programmed materials.

b. It was suggested that many additional areas of subject content could be served.

   c. Many personal experiences had convinced these persons that, with greater adaptation to local circumstances, the approach used in the project could yield additional returns.

4. The availability of assistance from the publishing company.

   During this period of the project the publishing company which produced the programmed materials used during semester two arranged for a representative to call on the project staff. This became a means of obtaining a number of items of information which were valuable in the use of the materials throughout the field. This visit was later augmented by a visit to the home office of the publishing company which was made in behalf of the project staff by a member of the Clarion State College staff.

5. The revision of the project budget to accommodate additional staff services.

   During the month of April it became increasingly clear that the budget which had been approved as part of the project's proposal was unrealistic in terms of its distribution of funds among its various categories. This led to a decision to request permission to transfer funds from parts of the budget where they would remain unused to parts where they could serve as a means of obtaining additional professional services needed for adequate processing of statistical data and analyzing of the results of that process. This request was granted and became a mutually accepted amendment to the contract between the United States Office of Education and Clarion State College.

It was this change in agreement that made the extensive statistical tables to be found in the appendices of this report possible. At no time was the total amount of the original budget exceeded.

6. The processing of data for the project.

   When this phase concluded, the processing of the data for this final report remained the most pressing primary task. Although the cards for data processing had been designed and much of the punching had been concluded, the last data to be obtained remained to be punched, and the task of designing the various statistical tables and processing of raw data was yet to be carried out.

7. The recognition of participants.

   As the academic year ended, the project staff designed a special certificate to be awarded to all students who had satisfactorily completed a specified minimum of course work while they were a part of the project. When these had been signed by the respective state college presidents and the director of research, they were forwarded to the respective high schools. They were then noted in each student's record, and the certificates were mailed to the respective students at their homes.

PHASE IV: JUNE 10 - SEPTEMBER, 1965

This was the concluding portion of the project period. It included the larger part of the data processing, analysis of data, design of the final report, and the actual writing of this report.

Although this was the busiest part of the project for the immediate staff, it was the least significant in terms of human activity related to the use of programmed materials. The results of that activity have been extensively set forth in subsequent portions of this report.

Extensive and varied anecdotal records which the research assistants accumulated throughout the project's conduct have been included in Appendix D of this report. Many of the aspects which have been mentioned in this chapter of the report have been based upon entries which were included in that group of anecdotal entries.

CHAPTER II

ANALYSIS OF STATISTICAL RESULTS

This chapter has been developed primarily around the contents of three subsequent portions of this report: (1) Appendix A, "Personal and Performance Data," (2) Appendix B, "Means, Standard Deviations, Standard Errors of Means, and Critical Ratios," and Appendix C, "Correlation Tables." Selected parts of it have been predicated upon incidental and/or selected items in Appendix D which has become a repository for anecdotal accounts.

PERSONAL AND PERFORMANCE DATA (Appendix A)

The following observations have emerged from the data included in Appendix A as those which are pertinent to this report:

1. The variety and quantity of data originally provided by the participating high schools indicated an extensive degree of cooperation with the project. These data included the scores which students had earned on special nation-wide college entrance tests, their respective cumulative quality point averages, and I.Q., grade level, sex, and the criteria used by local schools in selecting project students. The schools also cooperated by providing additional test scores obtained from extra-project, national testing programs which were administered during the school year of the project's activity.

2. There was a persistent and significant decline in the numbers of students who enrolled in the course and who completed the tests contained in the course, Introductory Descriptive Statistics. Although it was not possible for the project to determine the reasons for this trend conclusively, the pattern was as follows:

Activity	Number of Students
Enrolled in Statistics	400
Completed Test I	299
Completed Test II	118
	Normal Additional Effort
	Extended Additional Effort
Completed Test III	51
Completed Test IV	13
Completed Test V	4
Completed Final Test	4

The reader is reminded that all of the work completed in this project represented an effort in addition to that required by a high school schedule that, in nearly every participant's case, was already more completely filled than usual. Because of this factor and because of the drastically reduced time to complete the project activity which resulted from a starting date that was one-half of a semester late, the research staff has designated the completion of Test II as "Normal Additional Effort" and any effort beyond Test II as "Extended Additional Effort."

3. The extent and effectiveness of the local high school's cooperative procedures were consistently advantageous to the project as a whole. These procedures concerned the following:
    a. The initial nomination of pupils.
    b. Liaison activity between school and parents where the project was concerned.
    c. Publicity releases for public information.
    d. Parent, faculty, and public orientation and education about the purpose, procedures, and the spirit of the project.
    e. Maintenance of student records for project activity.
    f. Administration of unit tests.
4. The Anecdotal Records which have been included in this report and the Personal and Performance Data indicated that a very favorable and effective relationship existed between the two research assistants on the project staff and the representatives of the teaching and administrative staffs within the local high schools.

TESTS, SCALES, AND PERFORMANCE INDICATORS (Appendix B)

Tables which contain the Means, Standard Deviations, and Standard Errors of Means have been placed in Appendix B. Those included have been constructed for a total of fifteen selected indicators:

Mathematics Attitude - Table B-I

Mental Ability Test, Language Raw Score - Table B-IX

" " " , Language I.Q. - Table B-VII

" " " , Non-Language Raw Score - Table B-X

" " " , Non-Language I.Q. - Table B-VIII

Mental Ability Test, Total Raw Score - Table B-XI

" " " , Total I.Q. - Table B-VI

Programmed Materials Attitude - Table B-II

College Entrance Test, Verbal - Table B-XIII

" " " , Math - Table B-XIV

School I.Q. - Table B-V

School Q.P.A. - Table B XV

Human Behavior, Test I - Table B-XII

Statistics, Test I - Table B-III

Statistics, Test II - Table B-IV

Means, standard deviations and standard errors of means were computed for twelve population groups within the population sample. These twelve population groups are:

Grade 10, Boys
Grade 10, Girls
Grade 10, Total
Grade 11, Boys
Grade 11, Girls
Grade 11, Total
Grade 12, Boys
Grade 12, Girls
Grade 12, Total
Grades 10-12, Boys
Grades 10-12, Girls
Grades 10-12, Total

The means of the fifteen indicators were further analyzed for the following population groups:

Grade 10, Total

Grade 11, Total

Grade 12, Total

Grades 10-12, Boys

Grades 10-12, Girls

Grades 10-12, Total

The critical ratios between the various combinations of these six population groups were computed and tested for significance at the 5% level. Those found to be significant, that is, those which exceeded 1.96 were printed in italics. The tables of means, used in conjunction with the critical ratio table, established which population group had a significantly higher mean in each particular instance. This, in turn, permitted members of the project staff to test a series of null hypotheses in terms of distinct population groups with specific characteristics and levels of performance and growth.

The various combinations of the six population groups have been referred to as categories. These were listed in the first column of the critical ratio table. The indicators were listed across the top of the chart.

The following observations were made from an examination of the critical ratio table:

1. Statistics Test I, Statistics Test II, and Human Behavior Test I showed no significant critical ratios for any of the categories examined. This indicated that neither the grade level nor the sex of the student was a determining factor in

his performance on these tests and the programs of which they were a part.

2. Among those means that showed very few significant critical ratios were (1) Attitude Toward Programmed Materials, (2) Attitude Toward Mathematics, (3) College Entrance Tests, Verbal, and (4) School's I.Q. Of these, the first had only one significant critical ratio, and each of the remaining ones had two significant critical ratios.
3. Those indicators which showed the greatest number of significant critical ratios were Language Raw Score and Total Raw Score. Although there were these differences in groups, the correlation between mental measures and performance was not high. Therefore, this was not an important consideration.

4. Although the local high school's I.Q. data showed only two significant critical ratios for the categories examined, the total I.Q. obtained from the project's testing program showed seven critical ratios. This amounted to three and one-half times as many significant ratios in the project's testing results as compared to the results of the high school's programs to test mental ability.

The verbal rating obtained under the college entrance test showed two significant critical ratios, but the mathematics portion of the same test contained eight significant critical ratios. This amounted to four times as many critical ratios in the mathematics portion as compared to the verbal portion of the same examination.

5. The one significant critical ratio found in the data obtained from the scale, Attitude Toward Programmed Materials, indicated that grade 10 students had a better attitude toward these materials and/or this educational medium than did students in grade 12. If one assumed that such a measure involved linguistic capabilities, he could have expected the Language Raw Score of the mental ability test and of the Verbal portion of the college entrance test to show significant critical ratios in the same direction.

   Close inspection of the data for the Language Raw Score and for the mental ability test showed significant critical ratios for the category, Grade 10-Grade 12, but they were in the opposite directions from those related to Attitude Toward Programmed Materials. The means for the students in Grade 12 were higher than the means for students in Grade 10. The additional maturity of students in grade 12, as compared to the maturity of those in Grade 10, accounted for this.

   It was of interest to note that in the other categories examined there were apparently no significant differences in attitude toward programmed learning. This indicated that neither grade placement nor the sex of the student was a factor in determining one's attitude toward programmed learning.

6. It was found in the Tables of Means that in all of the boy-girl comparisons indicating significant critical ratios the

boys had higher means than the girls with the exception of one measurement scale, the School Q.P.A. The School Q.P.A. for girls was generally expected to exceed that for boys. It was obvious that boys evinced a better attitude toward mathematics and that they did better on the other testing devices which measured mathematical ability.

7. In all categories which included grade 10 students as one of the groups being compared with other population groups contained in the same sample, the critical ratios found under Attitude Toward Programmed Materials and School Q.P.A. were in favor of the grade 10 students. It was the reporter's opinion that grade 10 students had a better attitude toward programmed learning because of their enthusiasm for new learning and for the novelty of new media. It was felt that grade 10 students had a higher School Q.P.A. than the other population groups because the School Q.P.A. for grade 10 students was not based on as great an accumulation of courses as it was for grade 11 and grade 12 students, and because grade 10 students tend to be more concerned with academic grades and ratings than were older students.
8. There were no significant critical ratios for Grade 11, Girls and Grade 11, Total for any of the indicators examined. In other words, the means of the grade 11 students were not significantly different from the means of the total sample for any of the measuring scales. Similarly, the means of the grade 11 students were not significantly different from

the means of the girls for any of the measuring scales.

The statements above were the principal results of this project which emerged from the data contained in Appendix B. It is obvious that others were capable of identification and of elaboration, but the services which additional comparisons could have made to the significance of this report did not warrant further extrapolation.

PRODUCT-MOMENT AND CORRELATION TABLES (Appendix C)

When the possible correlations to be found in the data of this project were examined, it was found that 840 possible correlations existed. All of these were computed, and members of the project staff arranged for a total of ninety-six (96) of the respective Product-Moment Correlation (Scattergram) Tables to be developed. These are available in the Project Office, Clarion State College, and from them the eight (8) Correlation Tables, which comprise Appendix C of this report, were developed. The latter were designed and developed because of the curvilinear relationships which were suggested by the data.

An examination of the contents of the Product-Moment and the Correlation Tables revealed that the results which were obtained from two of the indicators (measurement instruments), which had initially been considered to be among the more important ones used, showed little relationship to the results obtained from the use of the remaining devices and procedures that were employed. The two scales were Attitude Toward Programmed Materials and Attitude Toward Mathematics.

Student responses on the scale, Attitude Toward Mathematics, were not predicated on verbal competencies, and none of the items on the same scale demanded that the student have and use competencies in mathematics. Testing devices that measured either or both of these competencies yielded scores that were unrelated to this scale.

An item analysis was made of the responses to the statements included on the scale, Attitude Toward Mathematics. It showed that the responses registered by project students agreed with the weighting indices provided by the author of the scale.

The second of these two scales, Attitude Toward Programmed Materials, did not measure any degree of achievement, verbal or mathematical. It was essentially a rating scale of personal reaction and/or bias, and it yielded scores that were unrelated to those scores obtained by the use of tests which measured these competencies.

In addition to the previous observations concerning the two scales to measure attitudes it was felt that certain overt relationships should exist between obvious predictors of success in the courses.

The two crucial devices in the entire project were the programmed learning materials, Introductory Descriptive Statistics and Human Behavior. All the other indicators were correlated with the tests for these programs and with each other in an attempt to discover relationships which might exist between them and the selected indicators.

1. A low degree of relationship was established between the two programmed courses and all of the other indicators. Although

a high degree of correlation had been expected, those correlations between such indicators as (1) the college entrance test - math, and Statistics test scores and (2) between the mental ability test - language, and Human Behavior test scores were .34 and .23, respectively.

2. If the indicators mentioned in item no. 1 had shown a high degree of correlation, one would expect certain supporting indicators also to exhibit a high degree of correlation. High School I.Q. shows a low degree of correlation with Human Behavior and Statistics I (.22) and High School Q.P.A. shows an equally weak relationship with the same two categories (.24).
3. The language portion of the mental ability test and the verbal portion of the college entrance test showed a relatively weak relationship (.64). Also, the non-language portion of the mental ability test and the math portion of the college entrance test showed a decidedly low degree of correlation (.34).

The entire list of correlation tables was completed to assure examination of all identified or suspected relationships. Many further observations could be made from the accumulated data in these tables, but it is felt that they would not be pertinent to this study. Because of the low degree of correlation in these charts no further statistical analyses were performed.

CHAPTER III

CONCLUSIONS

In Chapter I it was stated that this project was developed to observe and record what happened when programmed materials were made available to able students attending small high schools. The same chapter subsequently listed eight very general and very broad procedures which the project staff designed and implemented as a means of conducting the project. It also contained seven questions which had been identified as those which were pertinent to the problem and to the effective evaluation of the project.

On the bases of the analysis of the data which the project accumulated and of the anecdotal materials included in Appendix D and in the Clarion State College files for this report, the staff has identified the following conclusions as those which have emerged from this project:

1. Able students, parents, school administrators, and professional staff members who, voluntarily or involuntarily, are a part of relatively small public schools were interested and did participate in the program (curriculum) enrichment and expansion which programmed materials made possible for them.
    a. This project was able to procure the cooperation and participation of the initially established number of high schools and of students, and this was attained under the handicap of an unexpectedly late beginning and incomplete details about programs to be used, availability of materials, and uncertainty about supervision schedules and procedures.

   b. Students who participated accepted the obligation with the understanding that it would be an addition to their full school day schedules.

   c. Administrators and other staff members provided enthusiastic, encouraging, thoughtful, and extensive cooperation.

2. Despite an enthusiastic beginning, the loss of effort toward completing course work by means of programmed materials was both steady and substantial.

   a. An examination of Appendix A revealed that, except for becoming a part of the project, 101 students failed to complete any recorded activity and 181 others failed to progress beyond Statistics Test No. 1, the first test of the course.

   b. The evidence in Appendix D indicated that many of the persons related to the project insisted that this decrease in activity was the result of the lack of classroom routine, specific teacher control, and exhaustion of energy and time upon the more overt and usual activities in which peers and teachers were also involved.

   c. Much of the evidence related to this factor indicated that, although actual experience revealed that the course, Introductory Descriptive Statistics, would have been an extensive one to complete as an added academic load during a full-length semester, the load became significantly heavier because the time actually available was reduced by the late date when the programmed materials were initiated.

3. Within the grade and the chronological age levels included in the population sample, neither the grade level nor the sex of the student was a determining factor in his performance in the courses taught by means of programmed materials. (See Table B-XVI, Appendix B.)

4. It was possible to develop an effective, practical, and inspirational program of worthwhile educational improvement and innovation through a cooperative effort which included two state colleges and twenty public high schools. (See Appendix D.)

   a. The anecdotal materials in Appendices D and E revealed a steadily improving interest in and attitude toward (1) the newer medium, (2) the expansion of curriculum, (3) the cooperating institutions and agencies, and (4) the enrichment of course content and theory which became possible through the cross-feeding of ideas made possible by project-related communications and meetings.

   b. The local high school was both a practical and an effective laboratory for the initiation and implementation of educational innovation.

   c. The state college, in its role of a publicly-supported teacher education agency, was an acceptable and effective leader through which it was possible to motivate and coordinate activity designed to improve education on the part of a variety of agencies, institutions, and persons. (See Appendices A through D.)

5. The maximum utilization and satisfaction which were possible from programmed materials showed promise of going far beyond the subject matter, school system, grade level, and number of limitations of this project. (See Appendix D.)
    a. Throughout the project period, increasing numbers of incidents arose wherein a desire was expressed for a greater variety of subjects, grade levels, and student ability levels to be taught by means of programmed materials.
    b. Parents, teachers, and students indicated concern and/or frustration because there was insufficient time and energy to expend upon programmed materials because the design of the project precluded assigning priority to programmed courses that was higher than that assigned to regular high school courses.
    c. The availability of additional and/or more significant course content pointed to the need for serious study of the content which was already in the high school curriculum to determine its current and its continuing (relative) significance.
    d. Courses taught by programmed materials required a higher level of efficiency and of interest if they were to compete for student time against courses in which groups of students had the interest and motivation of each other and of a capable teacher.

The opposite was also true. A poor, uninspiring course in the usual classroom situation was, to some students, the best possible reason to seek a course taught by means of programmed materials and in which the student felt a reward that coincided with his interest, ability, and effort.

6. The effect of a schedule which saw the project begin about one-half of one semester behind the initially established date and which precluded extension of the classroom phase beyond the close of the previously-selected academic year remained a dominant and limiting factor. (See Chapter I and Appendix D.)
    a. Although the material initially planned for the project was more than adequate, the reduction of time by twenty-five percent below the original plan placed an inescapable handicap from which the students and staff never became free.
    b. In a project which involved the variety and number of students, institutions, agencies, and staff members which this one included, it was impossible to accelerate logistical and communication processes beyond a predetermined pace established by geography, institutional procedures, and human strength and availability.
7. The traditional concept, that learning which was most important was that which was taught in a formal class with teacher control and dominance, tended to limit performance in curriculum areas taught by means of programmed materials. (Some adults

urged students to neglect and/or abandon learning by programmed materials in the hope that this would lead to raising an already high grade in a regular classroom course.) (See Appendix D.)

8. Long term conditioning to arbitrarily established assignments, time limits, and personal goals caused many project students to be unable to adapt to a learning program where their personal ability, time, and goals were to govern their activities in relation to work covered. (See Appendix D.)
9. An examination of the means and of the standard deviations of the achievement scores which students attained in Statistics Test No. II, and Human Behavior Test No. I revealed that the scores tended to cluster closer to the mean within each succeeding test. Those students who completed the most work in the project's courses were more homogeneous in effort and in performance than were those included in the entire sample population. This was a normal result of a process which caused significant numbers of participants to terminate their (recorded) achievement with each succeeding level of attainment. (See Tables B-III, IV, and XII.)
10. The project demonstrated the effectiveness of programmed materials as a means of expanding and improving curricular opportunities in the small high school. This effectiveness existed in terms of the schedule, facility, personnel, student, and subject area limitations which were prevalent within the project schools. (See Appendices A through D.)

11. The results of the project activity indicated that programmed materials tended to possess their respective points of discouragement and encouragement insofar as students were concerned. The programs utilized in this project became most discouraging to students before the first unit examination and/or just after it was completed. On the other hand, the students who managed to progress near to the last two unit tests were very likely to complete the entire program and the final test. (See Appendix A.)

CHAPTER IV

IMPLICATIONS

The statistical and anecdotal data of this study have indicated a number of implications that grew out of this project. Although some of tham are at least partially associated with one or more of the conclusions which constituted Chapter III of this report, neither they nor others that have been suggested within the data could be described as hard and realistic conclusions of the study. They were most significant in what they suggested for the public schools rather than as what they have been proven to be.

A total of ten implications have been listed below:

1. An examination of the anecdotal materials which have been included in Appendix D indicated a general change in the attitudes of key persons as the project progressed. This was particularly true with regard to public school administrators and other professional persons, and it was additionally evident when comments made early in the project period were compared to those made at a later time by the same and/or similar persons. It was also apparent in the voluntary comments obtained from students regarding their change of mind and/or attitude toward the project's courses.

   Although this project did not treat the problem of attitude changes in a way that enabled question No. 3, Chapter I, to be answered as a conclusion, there was reason to believe that attitudes did change as the use of programmed materials progressed.

2. Evidence to be found in Appendix D also indicated that teachers were interested in learning more about programmed materials and the programming process. (See question No. 7, Chapter I.) This was particularly true on those occasions when members of the project staff served as consultants and keynote speakers for a number of various kinds of in-service meetings. Various teachers further indicated this by requesting sample programs related to their respective fields of specialization, and the United States Office of Education publication, Programs, '63, a directory for programmed materials, was in constant demand. A large number of high schools purchased copies of it.

Several schools proceeded to serve this interest and to encourage its expansion by establishing programmed materials centers in their respective libraries and/or instructional materials centers. This was also true in the participating state colleges.

3. There was evidence which indicated that some teachers reacted as if they considered programmed materials to be a potential threat to themselves and/or to their profession. (See question No. 6, Chapter I, and Appendix D.) Although this study's data did not provide specific evidence to indicate this, it was the most reasonable explanation for some of the anecdotal data included in the section, "Teacher Behavior," Appendix D.

In these cases the nature of the statements and the attitudes they tended to convey to the reader suggested a lack of understanding of the nature of programmed materials and/or a general bias against change in education.

4. Question No. 4, Chapter I, contained the following inquiry: "Do teachers begin to adjust their course content and teaching methods in the courses related to the programmed materials, . . .?" The design of the project precluded adequate assessment of this question, but there was evidence that suggested that it happened. In the anecdotal data of Appendix D selected comments made by teachers and by project staff members and/or summaries of observations indicated that this was one of the purposes which prompted teachers to request information, materials, and special assistance from members of the project staff.

5. In respect to whether programmed techniques begin to appear in courses not related in content to those courses which were taught by programmed materials the statistical and anecdotal data accumulated by this project were inconclusive. An assessment of the anecdotal data, Appendix D, and an analysis of the type of written and oral communication received during the course of the project revealed that teachers of wholly unrelated courses inquired about this project, its medium, and the trends that became evident. Although it was impossible to prove that specific changes had already been made, there remained a possibility that it could have taken place and/or that it would if properly demonstrated and encouraged.

6. This project did not permit the researcher to identify and evaluate the long term impact which programmed materials had upon the educational attainment of the students or upon the professional developments of the schools and teachers involved in it. The statistical and anecdotal data treated in this report identified significant developments that had come about during the project period. All of these showed promise of exerting a prolonged influence upon the students, teachers, administrators, and/or parents. It was believed that the principal educational institutions and agencies affiliated with this project were obligated to design and implement long range steps to adequately determine and evaluate the continuing impact of the project.

   The nature of this impact was evident in selected conclusions to be found in Chapter III and in the statistical and anecdotal data in Appendices A through D.

7. The tendency for programmed materials to possess levels of student progress at which the student was most likely to become discouraged or encouraged, see item No. 11, Chapter III, and Appendix A, implied a need for, and a possibility for, producers of programmed materials to improve holding and/or motivating power by devoting more attention to specific parts of a course. This implies that the widespread use of programmed materials could be significantly expedited with relatively little additional effort on the part of authors and publishers.

8. Conclusion No. 7, Chapter III, and a number of the anecdotal

entries in Appendix D suggested that a significant deterrent to the widespread use of programmed materials was the lack of realistic concepts and attitudes toward education. Parents, teachers, administrators, and students repeatedly permitted grades, personal associations, classroom status, and teacher impact to determine the nature, the quantity, and/or the quality of work completed within the broader curriculum opportunities which were possible.

This suggested that greater realism and adequacy in matters related to personal standards of excellence, personal goals, classroom status, and educational priorities constituted a basic factor which limited student attainment in this project.

9. Although some expressed belief that superior students failed to go beyond the expectations established for their less able clasemates because of low motivation, initiative, and/or ambition, conclusions No. 1 and 2, Chapter III, and the statistical and anecdotal data in Appendices A and D, respectively, did not completely support this theory. In the case of students in this project the public schools, homes, and assorted community agencies and/or institutions frequently contributed substantially to this by (1) insisting that superior students conform to time requirements required of less able students and by (2) expecting superior students to assume a greater variety and quantity of extra-school duties and responsibilities.

This project suggested that it was frequently exhaustion of human energy and time, not the hoarding of it, that prevented the superior student from seeking and/or attaining his highest status in terms of excellence while he was a part of the public schools' student body.

10. The general results of this project suggested that an educational innovation is capable of implementation through appropriately and cooperatively developed steps at the regional and/or local level of public education. Schools and related public education agencies responded readily and favorably when the assistance of interested co-workers and colleagues was at their command. Once they became involved, careful and reasononable direction erased uneasiness. As this happened, the prospects of the new media becoming a promising part of the local program tended to escalate rapidly.

    This type of leadership constituted a primary and significant service of the smaller state-supported teacher education college in the case of this project.

A STAFF RECOMMENDATION

A concluding note concerned the basic study. As this report was developed, one idea frequently arose within the minds of those who worked with its contents, and it was decided to conclude this report with its identification.

The various conclusions and implications of this project have seemed so unexpected and startling that on many occasions the data have been completely and carefully restudied. On each occasion it was impossible to reach any different or less disturbing result. Because of this the members of the project staff unanimously recommended that the project's replication within a totally different group of teacher education institutions and high schools and without any prior acquaintance with the contents of this report be strongly recommended.

APPENDIX A

PERSONAL AND PERFORMANCE DATA

TABLE NO.	HIGH SCHOOL NO.	PAGE
A - I	101	55
A - II	102	56
A - III	103	57
A - IV	104	58
A - V	105	59
A - VI	106	60
A - VII	107	61
A - VIII	108	62
A - IX	109	63
A - X	110	64
A - XI	201	65
A - XII	202	66
A - XIII	203	67
A - XIV	204	68
A - XV	205	69
A - XVI	206	70
A - XVII	207	71
A - XVIII	208	72
A - XIX	209	73
A - XX	210	74

APPENDIX A (continued)

NOTE: THE HIGHEST SCORES ATTAINABLE ON THE ACHIEVEMENT TESTS WERE:

STATISTICS NO. 1 - 66 points

STATISTICS NO. 2 - 53 points

STATISTICS NO. 3 - 27 points

STATISTICS NO. 4 - 34 points

STATISTICS NO. 5 - 51 points

FINAL (STATISTICS) - 71 points

- - -

HUMAN BEHAVIOR NO. 1 - 25 points

TABLE A-I

DATA FOR HIGH SCHOOL NO. 101

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01101122	3.24	123	46	111	78	59	133	98	105	118	88	398	510	397	524	73	40	58										
02101122	3.72	119	55	120	89	56	125	93	111	121	92	476	582	586	660	93	41	58	38									
03101122	3.81	131	73	157	99	48	109	68	121	129	98	696	654	651	650	75	51	60	49	19								
04101121	3.33	117	66	135	98	24	67	2	90	109	70					86	42	62	47	17	26			17				
05101121	3.14	116	55	120	89	49	110	72	104	117	87	456	546			76	36	52	42	20								
06101121	3.60	117	60	124	94	52	117	83	112	122	93	521	600			65	44	61	41	21				22				
07101122	3.90	126	58	123	92	54	121	89	112	122	93	450	528			62	38	50						22				
08101112	3.71	116	60	124	94	44	101	50	104	117	87	547	467			55	29	50	23									
09101112	4.00	119	53	118	87	55	123	91	108	120	90	599	607			50	35	63	44	24				23				
10101111	3.04	121	49	115	83	51	115	80	100	115	82	560	707			72	30	46	33	20				19				
11101111	3.30	123	63	129	96	58	130	97	121	129	98	514	642			51	48	63	45	22								
12101111	3.40	120	53	118	87	48	109	68	101	115	83					81	44	39	34	4				19				
13101111	3.32	114	63	129	96	51	115	80	114	124	94	586	537			55	31	47	27	12				21				
14101102	3.80	122	48	119	90	38	95	40	86	111	70					84	30	45	41	17				16	7			
15101102	3.50	120	55	122	95	47	110	80	102	119	90					71	38	60	43	18				21	15			
16101102	3.82	122	61	129	98	61	144	99	122	134	99					93	29	55	39					21				
17101112	3.40	117										553	590				36							21				
18101102	3.21	117															28							21				
19101111	3.50	127	60	124	94	52	117	83	112	122	93	508	607				47							22				

TABLE A-II

DATA FOR HIGH SCHOOL NO. 102

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short-Form) Secondary B Language R.S.	Language I.Q.	Language PCT	Non-Language R.S.	Non-Language I.Q.	Non-Language PCT	Total R.S.	Total I.Q.	Total PCT	C.E.E.B. (First) Language	C.E.E.B. (First) Math.	C.E.E.B. (Second) Language	C.E.E.B. (Second) Math.	Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS Test I	Test II	Test III	Test IV	Test V	Final	HUMAN BEHAVIOR Test I	Test II	Test III	Test IV	Final
01102121	3.00	126										521	609	605	650	71												
02102121	3.15	122										560	609	572	677	92												
03102122	3.55	130	66	135	98	57	128	95	123	131	99	618	582	572	554	57	21											
04102121	3.68	131										534	546	507	677	82												
05102121	3.08	129	59	123	93	57	128	95	116	126	95	489	681	514	712	83	32							16				
06102121	3.55	127										515	672	507	580	94												
07102121	3.42	131	61	126	95	58	130	97	119	128	97	631	600			80	29											
08102121	3.24	128	67	138	99	54	121	107	121	129	98	664	609	644	703	49	43											
09102122	3.61	127										567	537	625	527	70												
10102121	3.38	123	62	128	96	52	117	83	114	124	94	534	627	559	598	89	33	51										
111021222	3.88	121										605	582			53												
12102121	3.64	133	62	128	96	47	107	62	109	120	91	547	627	566	686	82	38											
13102122	3.50	128										523	564			60												
14102121	3.06	121	55	120	89	59	133	98	114	124	94	521	573			94	28											
15102112	3.59	123	45	111	77	44	101	50	89	108	69	586	476			63	37	45										
16102111	4.00	117	57	122	91	54	121	89	111	121	92	495	678			39	33	55										
17102112	3.70	121	56	121	90	49	110	72	105	118	88	579	546			75	41	48										
18102112	3.80	126	57	122	91	52	117	83	109	120	91	573	537			44	40	52										
19102111	3.32	122	68	141	99	53	119	86	121	129	98	671	581			62	42	51										
20102101	4.00	125	54	128	95	52	124	90	106	127	90					75	29											
21102101	4.00	137	59	126	99	57	131	98	116	129	98					70	44	59										
22102102	3.00	129	56	127	95	53	125	90	109	126	95					52	42	44										
23102102	3.60	121	63	132	98	52	119	90	115	127	95					79	52	56										
24102101	3.42	127	52	119	90	51	116	90	103	119	90					52	47											
25102102	4.00	132														66	24											
26102102	335	124	65	139	99	43	104	60	108	125	95					50	44	47										
27102101	350	121															48											

TABLE A-III

DATA FOR HIGH SCHOOL NO. 103

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B: Language R.S.	Language I.Q.	Language PCT	Non-Language R.S.	Non-Language I.Q.	Non-Language PCT	Total R.S.	Total I.Q.	Total PCT	C.E.E.B. (First) Language	C.E.E.B. (First) Math.	C.E.E.B. (Second) Language	C.E.E.B. (Second) Math.	Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS Test I	Test II	Test III	Test IV	Test V	Final	HUMAN BEHAVIOR Test I	Test II	Test III	Test IV	Final
01103121	3.92	135	76	148	99	53	119	86	129	140	99	631	663			65												
02103122	3.50	124	53	118	87	47	107	62	90	109	70	535	580			73												
03103122	3.00	129	49	115	83	56	125	93	105	118	88	456	492	527	536	90	35											
04103122	3.74	122	54	120	88	48	109	68	102	116	85	541	537	520	510	64	37											
05103121	3.00	125	59	123	93	50	112	76	109	120	91	605	580			81	45	22						18				
06103121	3.13	132	66	135	98	52	117	83	118	128	97	567	541	690	580	89	38											
07103121	3.50	125	60	124	94	59	133	98	119	128	97	463	636	579	686	70	42	48										
08103121	3.72	116	50	115	84	54	121	89	104	117	87	436	510	507	589	82	46	43										
09103122	3.14	130	62	128	96	51	115	80	113	123	94	512	601	572	615	81	47	55										
10103122	3.00	129	58	123	92	49	120	72	107	119	89	502	564			55	48											
11103122	3.53	133	51	116	85	58	130	97	109	120	91	534	645			54	39											
12103111	3.70	130	69	143	99	56	125	93	125	134	99	684	520			69	33	41	38					20	12			
13103111	3.70	124	67	138	99	57	128	95	124	133	99	606	572			70	43	55	30					18				
14103111	4.00	122	53	118	87	38	91	27	91	109	72	573	546			79	27	48	37									
15103112	3.50	135	57	122	91	59	133	98	116	126	95					73	46											
16103112	3.51	133	68	141	99	54	121	89	122	130	99	710	555			41	57							16				
17103111	3.82	125	54	120	88	54	121	89	108	120	90					76	42	43										
18103101	3.41	128	43	112	80	51	117	90	94	114	80					64	34	43										
19103101	3.00	136	43	114	80	49	115	80	92	115	80					54	27	51										
20103102	4.00	120	62	128	96	52	117	83	114	124	94					79	44											
21103102	3.90	122	51	116	85	50	112	76	101	115	83					58	42	49										
22103101	3.12	123	47	116	80	48	117	80	95	115	80					73	44							17				
23103102	3.90	122	57	126	95	56	130	98	113	127	95					60	42	56	31					21				
24103102	3.91	128	41	110	80	48	111	80	89	110	80					70	48											
25103102	4.00	124	61	128	98	50	114	80	111	123	95					75	34	63						23				
26103102	3.43	120	42	110	80	57	128	98	99	115	90					50	37											
27103101	4.00	121	55	121	95	57	129	98	112	123	95					88	46	63	38					19	13	18	15	36

TABLE A-IV

DATA FOR HIGH SCHOOL NO. 104

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01104121	3.00	134	63	129	96	57	128	95	120	129	98	574	605			49	36											
02104122	3.43	128	62	128	96	55	123	91	117	126	96	596	537	600	680	55	16	39										
03104122	3.42	123	47	112	80	51	115	80	98	113	80	502	497	475	555	72	27	56										
04104122	3.50	133	64	130	97	58	130	97	122	130	99	544	562	559	606	53	15	60										
05104121	3.50	113	60	124	94	52	117	83	112	122	93	580	609			98	24	54	81					19				
06104121	3.00	130	57	122	92	56	125	93	113	123	94	667	567			60												
07104111	3.24	120	54	120	88	52	117	83	106	119	89	586	598			70	29							18				
08104111	3.13	117	47	112	80	45	103	53	92	110	73	487	565			60	28	55	33									
09104111	3.13	120	52	117	86	53	119	86	108	118	88	625	459			68	38	50						21				
10104111	3.42	127	48	113	81	49	110	72	97	112	79	430	460			84	28											
11104112	3.24	125	52	117	86	54	121	89	106	119	89	475	497			83	29	40						21				
12104112	3.71	118	55	120	89	47	107	62	102	116	85	562	526			80												
13104112	3.40	119	58	123	92	50	112	76	108	120	90	531	536			70												
14104112	3.32	125	52	117	83	51	115	80	103	117	86					62	43	61	44	17	27	32	41	19	12			
15104101	3.31	123	61	126	95	59	133	98	120	129	98					60	39	49	24	14				21	13	15	18	
16104102	3.60	130	55	126	95	49	116	80	104	122	90					88	29	57	30	10	23	24	42	23	13	19	19	44
17104101	3.83	139	63	136	98	50	118	80	113	129	95					76	52	63	39	16	30	29	45	17	15	16	19	41
18104101	4.00	122	61	127	98	56	127	98	117	127	98					68	44	54	36	24	27			19	11	16	18	42
19104112	3.00	117										431	526				51							17				
20104112	3.70	115															51											
21104111	2.70	123										612	517				48											
22104101	3.43	114															51							18	9	9		
23104102	3.72	112															30							13				

TABLE A-V

DATA FOR HIGH SCHOOL NO. 105

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final.
01105122	3.71	127	49	115	83	52	117	83	101	115	83	431	546			70	32	53										
02105121	2.87	130	48	113	81	55	123	91	103	117	86					93	44	37										
03105122	3.29	114	30	95	34	48	109	68	78	101	50					61	26	33	24					14				
04105121	2.86	116	47	112	80	47	107	62	94	111	76	541	393	546	466	39	29	23										
05105122	3.63	114	40	107	66	51	115	80	91	109	72	392	528	455	501	66	41	43										
06105122	3.62	119	43	109	72	51	115	80	94	111	76					88	50	43										
07105122	3.35	127	48	113	81	50	112	76	98	113	80	476	528	475	615	79	29	42										
08105122	3.82	134	70	146	99	59	133	98	129	140	99	644	663	592	686	83	26	54						23				
09105122	3.36	128	57	122	91	50	112	76	107	119	89	560	564			23	29	54										
10105122	3.00	121	55	120	89	47	107	62	102	116	85	569	488			69	34	33						21				
11105122	3.02	126	53	118	87	55	123	91	108	120	90	406	440			26	46	26										
12105121	3.03	118	53	118	87	55	123	91	108	120	90	482	633			32	33	32	25									
13105112	3.10	122	35	102	52	53	119	86	88	108	68	521	520			76	41	7										
14105112	4.00	122	52	117	86	48	109	68	100	115	82	495	572			70	27	29										
15105112	3.00	132	47	112	80	53	119	86	100	115	82					74	32	44						19				
16105101	3.00	132	53	125	90	49	117	80	102	123	90					72	48											
17105102	2.87	135	51	123	90	55	130	95	106	126	90					49	33	18						17				
18105102	3.90	125														60												
19105101	3.40	122	48	117	90	49	114	80	97	116	80					51	49	14										

TABLE A - VI

DATA FOR HIGH SCHOOL NO. 106

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary S- Language			Non-Language			Total			C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01106121	3.95	128	65	133	98	56	125	93	121	129	98	541	627			86	33	52										
02106121	3.40	125	57	122	91	61	140	99	118	128	97	431	605	566	712	87	36	56						20				
03106122	3.65	117	60	124	94	53	119	86	113	123	94	482	463	546	562	40	21											
04106122	3.72	114	64	130	97	51	115	80	115	124	95	437	474			99	37	55										
05106122	3.90	121	64	130	97	35	85	17	99	114	81	599	519			60	42	54										
06106122	3.95	123	63	129	96	60	136	99	123	131	99					69	46	52						23				
07106122	3.83	123	50	115	84	57	128	95	107	119	89	541	591	546	589	103	36	49										
08106112	3.95	129	63	129	96	42	97	42	105	118	88	566	607			83	41	50	32									
09106112	3.72	119	42	109	70	55	120	91	97	112	79	455	572			93	28	58										
10106111	4.00	122	63	129	96	48	109	68	111	121	92	560	598			88	43	59						22				
11106112	3.90	121	59	123	93	51	115	80	110	121	91	508	625			93	39	60						22	18			
12106112	3.92	118	54	120	88	51	115	80	105	118	88	423	520			99	37	53										
13106102	3.95	117	41	111	80	45	105	60	86	109	70					68	34	49										
14106102	3.93	116	53	118	90	44	102	60	97	113	80					102	43	61										
15106102	3.95	121	54	120	95	44	102	60	98	114	90					79	30	58	32					18				
16106102	3.90	120	45	114	80	51	118	90	96	116	80					75	35	60						22				
17106102	3.90	126	54	120	88	50	112	76	104	117	87					61	27	57										
18106102	3.92	121	44	110	75	52	117	83	96	112	78					64	27	45						18				
19106102	3.91	119	37	109	70	38	95	40	75	102	50					74	32							21				
20106111	3.50	115										410	642			83	35							20	7			
21106102	3.90	115														56	30							14				

TABLE A - VII

DATA FOR HIGH SCHOOL NO. 107

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									O.R.R.B. (First)		O.R.R.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01107122	4.00	137	51	116	85	55	123	91	106	119	89	515	600			87	46											
02107121	3.50	119	57	122	91	52	117	83	109	120	91	514	610			89	25											
03107122	3.52	123	57	122	91	49	110	72	106	119	89	541	546			61	34											
04107112	3.10	118	42	109	70	54	121	89	96	112	78					67	33	53										
05107112	3.02	120	56	121	90	47	107	62	103	117	86	599	528			54	24	55										
06107112	3.63	113	44	110	75	46	105	57	90	109	70	488	415			62	33	50										
07107112	3.45	116	49	115	83	46	105	57	95	111	77	606	485			41	33	55						17				
08107112	4.00	130	63	129	96	48	109	68	111	121	92	723	633			58	47	61	45									
09107111	3.25	116	45	111	77	51	115	80	96	112	78	475	520			79	40											
10107111	3.00	123	42	109	70	42	97	42	84	105	61					88	39	53										
11107112	3.14	123	43	109	72	47	107	62	90	109	70	475	450			74	34	58	38	17				18				
12107112	3.36	125	60	124	94	38	91	27	98	113	94	521	458			68	29	40										
13107102	3.60	133	42	110	80	42	97	50	84	106	70					62	39	65										
14107102	4.00	128	49	119	90	54	125	95	103	121	90					74	41	59										
15107101	4.00	137	59	125	95	41	97	50	100	116	90					72	45	54						14				
16107102	4.00	117	42	110	80	50	113	80	92	111	80					78	34	52										

TABLE A - VIII

DATA FOR HIGH SCHOOL NO. 108

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01108122	3.50	124	64	130	97	59	130	97	123	130	99	444	573	579	659	65	46	47										
02108121	3.00	118	48	113	81	57	128	95	105	118	88	476	573	501-	598	82	38	36						20				
03108121	3.32	122	51	116	85	57	128	95	108	120	90	409	554	507	677	95	30	27						12				
04108121	3.45	126	50	115	84	57	128	95	107	119	89	489	694	590	699	63	37	46						21				
05108111	3.23	129	62	128	96	55	123	91	117	126	96	534	668			83												
06108111	3.50	132	55	120	89	57	128	95	112	122	93	599	697			56	39	61	50	25	27	40	58	23				
07108112	3.35	124	42	109	70	54	121	89	96	112	73					95	36	39						21				
08108112	3.52	116	54	120	88	57	128	95	111	121	92					76	39	55										
09108112	4.00	121	58	123	92	51	115	80	109	120	91					87	28	54										
10108112	4.00	117	52	117	86	47	107	62	99	114	81	534	555			61	26	58										
11108112	3.47	124	53	118	87	55	123	91	108	120	90	638	598			70	41	54										
12108112	3.86	132	56	121	90	58	130	97	114	124	94	573	607			51	44	61						18				
13108112	3.83	131	59	123	93	51	115	80	110	121	91	442	581			50	37	60										
14108102	3.75	133	54	121	95	52	118	90	106	120	90					47	31	57	34					22	12			
15108101	3.32	124	45	112	80	52	120	90	97	116	80					71	45	50	39									
16108101	3.29	134	47	115	80	57	130	98	104	119	90					91	39	44										
17108102	3.26	123	56	127	95	49	116	80	105	124	90					40	50	49						19				
18108102	4.00	133	52	123	90	52	123	90	104	123	90					88	43	58	39	18								
19108102	4.00	124	49	118	90	51	125	90	100	118	90					65	33	43										
20108101	3.33	126	47	112	80	52	117	83	99	114	81					89	38	52						21				
21108112	3.50	119										449	458				40											

TABLE A - IX

DATA FOR HIGH SCHOOL NO. 109

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01109122	3.60	123	57	122	91	52	117	83	109	120	91	504	469			72	33	49	32					18				
02109122	3.55	131	55	120	89	58	130	97	113	123	94	491	524	592	598	76	27	43						14				
03109121	3.32	116	48	113	81	47	107	62	95	111	77	531	424	449	483	58	35	23	26									
04109121	3.27	124	53	118	87	57	128	95	110	121	91	460	554	488	686	78	34	28										
05109121	3.80	125	61	126	95	49	110	72	110	121	91	635	529	690	589	59	48	54	58					23				
06109121	3.43	120	50	115	84	53	119	86	103	117	86	428	529	500	603	99	38											
07109122	3.27	119	57	122	91	53	119	86	110	121	91	551	521			58	31	20										
08109122	3.05	123	38	105	62	54	121	89	92	110	73	370	537	455	554	93	33	27										
09109112	3.82	119	45	111	77	45	103	53	90	109	70	469	449			99	41	23										
10109101	3.03	115	52	120	90	54	124	95	106	122	90	531	574			79	58	14						14	10			
11109112	3.44	122	42	109	70	54	121	89	96	112	78	444	545			86	34											
12109112	3.01	131	48	113	81	53	119	86	101	115	83	456	613			84	33	8										
13109111	3.42	116	40	107	66	48	109	68	88	108	68	475	545			93	47	33						19				
14109102	3.30	124	41	112	80	35	89	20	76	103	60	431	430			59	47	37						19				
15109102	3.14	129	49	116	90	61	142	99	110	122	95	550	603			79	49	26						20				
16109102	3.82	124	47	116	80	58	134	99	105	121	90	456	469			34	39	46						20				
17109102	3.82	125	40	113	80	49	116	80	89	114	80	437	382			60	35	29										
18109102	4.00	122	49	121	90	63	148	99	110	127	95	475	517			34	47	47										
19109102	4.00	124	62	135	98	56	133	98	118	135	98	456	420			60	40	18										

TABLE A-X

DATA FOR HIGH SCHOOL NO. 110

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01110122	3.00	120	56	121	90	48	109	68	104	117	87	525	473	566	492	65	45	39										
02110122	3.51	120	40	107	66	51	115	80	91	109	72	403	480			71	39	22										
03110122	3.84	121										512	497	527	571	89	30	47										
04110122	3.84	121	57	122	91	49	110	72	106	119	89	589	521	527	650	94	45	61										
05110112	3.23	130	47	112	80	48	109	68	95	111	77	486	578	449	528	61	21											
06110121	3.20	119	53	118	87	53	119	86	105	119	89	480	602	455	624	94												
07110121	3.23	120	46	111	78	52	117	83	98	113	80	463	596	469-	680	72	40											
08110122	3.47	121	49	115	83	50	112	76	99	114	81	460	505	442	562	69	45	37						16	11	16	13	
09110111	3.10	118	50	115	84	53	119	86	103	117	86					39	25	25										
10110112	3.55	125	55	120	89	51	115	80	106	119	89	508	511			87	22	39										
11110111	3.55	125	43	109	72	59	133	98	102	116	85	462	651			76	30											
12110112	3.24	116	36	103	55	50	112	76	86	106	64	377	493			79	43											
13110112	3.43	126	55	120	89	43	99	46	98	113	80	442	528			55	29	43										
14110112	3.32	120	52	117	86	38	91	27	90	109	70	475	546			51	35	54										
15110102	3.50	126	54	120	88	54	121	89	108	120	90					79	41							14				
16110102	3.20	121	35	104	60	49	113	80	84	107	70					73	36	44										
17110102	3.43	122	44	112	80	52	119	90	96	114	80					99	49											
18110102	3.66	126	40	113	80	45	109	60	85	112	70					70	56	54										
19110102	3.53	118	43	112	80	53	122	90	96	116	80					75	40	38										
20110101	3.42	115	44	117	80	56	133	98	100	122	90					99	31	42	36									

TABLE A-XI

DATA FOR HIGH SCHOOL NO. 201

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01201122	3.69	135	67	138	99	52	117	83	119	128	97	664	600	696	694	79	17	55										
02201122	3.22	133	62	128	96	55	123	91	117	126	96	534	537	553	642	74	22	55	37					21				
03201122	4.00	134										631	699	631	712	89	49	62	39	20	28							
04201122	3.45	132	50	115	84	56	125	93	106	119	89	437	627	527	668	79	27	60	47					20				
05201121	3.80	125	58	123	92	40	94	34	98	113	80	612	546	605	554	71	42	57	45					20				
06201121	3.85	134	69	143	99	56	125	93	125	134	99	677	636	690	650	83	42	65	47					17				
07201112	3.91	135	55	120	91	56	125	93	111	121	92	599	651			64	38	56	49									
08201111	3.66	125	58	123	92	54	121	89	112	122	93	599	572			93	37	59	40	24				21				
09201112	3.72	144	65	133	98	57	128	95	122	130	99	547	687			83	32	57	28					22	12			
10201111	3.33	124	69	143	99	53	119	86	122	130	99	521	572			93	36	47	34	16								
11201112	3.55	139	67	138	99	56	125	93	123	131	99	664	607			99	30	59	40	17				22				
12201102	3.60	125	51	116	90	42	97	50	93	111	80					89	40	52						23				
13201101	4.00	140	75	172	99	62	150	99	137	160	99					89	36	66	50	25	28			21	10	19	14	
14201102	3.92	129	46	115	80	49	114	80	95	115	80					88	30	58	44					23				
15201101	3.83	129	51	118	90	48	118	80	99	116	90					67	24	57						20				
16201101	3.57	125	52	119	90	55	126	95	107	121	90					73	29											
17201101	3.64	140	52	118	90	60	138	99	112	123	95					87	30	48						18				
18201102	3.81	127	51	117	90	48	111	80	99	115	90					86	30	60										
19201101	3.53	121	54	122	95	55	125	95	109	122	95					77	31	54	33									
20201101	4.00	125	51	116	90	57	128	98	108	120	95					61	23	49										

TABLE A - XII

DATA FOR HIGH SCHOOL NO. 202

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01202121	3.77	132	64	130	97	56	125	93	120	129	98	670	600	644	721	60	36	63										
02202122	3.25	125	59	123	93	49	110	72	108	120	90			494	448	71	43	61	35									
03202122	3.56	136	56	121	90	56	125	93	112	122	93	573	600	611	615	99	25											
04202122	3.41	127	68	141	99	53	129	86	121	129	98	592	546	657	598	66	34	61	50									
05202122	3.59	133	43	109	72	55	123	91	98	113	80	476	528	455	518	88	44	59										
06202122	3.77	137	54	120	88	55	123	91	109	120	91	502	438	572	510	37	26											
07202121	3.81	129	57	122	91	59	133	98	116	126	95	503	573	579	686	75	47	63										
08202122	3.40	130	58	123	92	48	109	68	106	119	89	521	609			81	26											
09202112	3.53	126	54	120	88	49	110	72	103	117	86					51	34	40						15				
10202112	3.50	117	48	113	81	45	103	53	93	110	74	553	362			88	40	46	22					17				
11202111	3.80	127	40	107	66	55	123	91	95	111	77	534	493			74	37											
12202112	3.72	127	37	104	58	60	136	99	97	112	79	397	537			81												
13202112	4.00	128	55	120	89	53	119	86	108	120	90	579	607			79	24	51	36									
14202102	3.84	130	54	128	95	52	124	90	106	127	90					79	48	61	41	19								
15202102	3.57	121	42	109	70	49	110	72	91	109	72					79	47	54						15				
16202101	3.88	134	54	122	95	60	139	99	114	127	95					89	30	60										
17202101	3.31	130	52	118	90	58	127	98	108	121	95					79	47	47										
18202102	3.33	127	34	107	60	37	95	30	71	100	50					82	37	35										
19202101	3.72	115	36	104	60	53	119	90	89	108	80					99	29	51										
20202101	3.42	133	55	120	95	50	113	80	105	118	90					60	45	51						21				
21202112	3.52	126	42	109	70	53	119	86	95	111	77																	
24202122	3.48	119										599	429	592	562		35											

TABLE A - XIII

DATA FOR HIGH SCHOOL NO. 203

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01203122	3.51	131										611	659			88		61										
02203122	3.52	113	56	121	90	52	117	83	108	120	90	586	429			75	35	56	40					21	15	18		
03203122	3.52	134	61	126	95	59	133	98	120	129	98	580	654	638	712	69	45	64	43									
04203122	3.73	121	61	126	95	55	123	91	116	126	95	570	586	611	633	55	30	55										
05203121	3.45	118	48	113	81	53	119	86	101	115	83					41	43	54	42									
06203122	3.56	124	54	120	88	40	94	34	94	111	76					40	39	62										
07203122	3.39	126	63	129	96	60	136	99	123	132	99	476	582			59	36	56										
08203112	3.85	126	57	122	91	55	123	91	112	122	93	560	563			72	30	58	39	14				20				
09203112	3.38	132	60	124	94	51	115	80	111	121	92					55												
10203112	3.70	128	39	106	64	51	115	80	90	109	70	524	581			81	45	50	40									
11203112	4.30	127	[illegible]	129	96	50	112	76	113	123	94	540	633			94	33	60	42									
12203112	3.30	124	47	112	80	52	117	83	99	114	81	534	493			99	42	58	43	26								
13203112	3.85	131	60	124	94	53	119	86	113	123	94	566	607			40	26	58						17				
14203112	3.42	125	61	126	95	52	117	83	113	123	94					38	26	57						18				
15203102	3.31	126	45	116	80	49	115	80	94	116	80					89	44	60										
16203101	3.72	124	51	117	90	60	138	99	111	122	95					79	38	60										
17203101	3.64	132	54	126	95	53	125	90	107	125	90					99	39	47										
18203102	3.86	130	60	125	95	54	121	95	114	125	95					60	42											
19203101	3.33	136	46	114	80	59	136	99	105	120	90					70	45	51										
20203101	3.66	125	52	117	36	54	121	89	106	119	89					82	38	50	43	19				23	15	13		

TABLE A - XIV

DATA FOR HIGH SCHOOL NO. 204

(PERSONAL AND PERFORMANCE)

Student Number (Project)	G.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary S									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01204122	3.84	132	58	131	90	58	125	93	112	127	93					78	28	51	34									
02204122	3.33	126	63	129	96	52	117	83	115	124	95	573	609			53	24	50	28	10				19				
03204121	3.33	131										442	703	456	734	99												
04204122	3.55	125	46	111	78	60	136	99	106	119	89	444	663			75	19	61	42	18								
05204122	3.71	128	57	127	91	54	121	89	111	121	92	548	638			90	24	56	44	18								
06204112	3.44	131	44	130	97	58	125	93	100	129	98	619	616			69	29	56	28					17				
07204112	3.44	123	50	115	84	44	101	50	94	111	76	482	458			66	37	50						17				
08204112	3.96	139	68	141	99	61	140	99	129	140	99	638	560			93	36	64										
09204111	3.83	127	61	136	95	60	136	99	121	129	98	560	668			75	34	49	34									
10204112	3.25	128	45	111	77	40	94	34	85	106	63	455	493			83	26	47	37					18				
11204112	3.57	127	58	123	92	55	123	91	113	123	94	586	660			77	34	56	29	10								
12204101	3.89	129	63	127	90	56	129	98	104	120	90					83	40	57	44	14				17				
13204102	3.29	131	46	116	80	48	114	80	94	116	80					56	43	50	23					15				
14204102	3.26	128														74	31	50										
15204102	3.40	130	47	117	80	52	121	90	99	118	90					91	43	43	19									
16204101	3.75	136	48	115	90	52	119	90	100	116	90					72	33	54	40									
17204101	3.95	141	54	120	88	62	143	99	116	126	95					93	48	58	28	16	30			21				
18204100	3.40	126	46	111	78	52	117	83	98	113	80					75	41	52										
19204102	3.78	139	59	126	95	45	105	60	104	119	90					73	42	57	36					20				
20204101	3.31	120	47	119	80	35	90	20	82	110	70					93	32	47	32									
21204101	3.73	118	60	127	95	46	107	70	106	121	90	606	583				35											

TABLE A - XV

DATA FOR HIGH SCHOOL NO. 205

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01205122	3.85	138	65	133	98	59	133	98	124	133	99	596	594	645	621	65	26	62										
02205122	3.56	128	50	115	84	41	96	38	91	109	72	521	501			82		58										
03205121	3.53	131	56	121	90	51	115	80	107	119	89	450	528			68	23											
04205121	3.91	133	72	153	99	56	115	93	128	138	99	644	591	683	659	92	22	64	43									
05205122	3.60	141	57	122	91	51	115	80	108	120	90	611	511			68		58										
06205121	3.30	134	58	123	92	56	125	93	114	124	94	528	743	631	730	93	23	48	49	27								
07205121	3.90	140	71	149	99	55	123	91	126	135	99	670	703			68	15	58	37									
08205121	3.20	138	57	122	91	48	109	63	105	118	88	554	690	559	659	67	35	57										
09205111	3.50	120	64	130	97	54	121	89	118	124	97	573	590			70		37										
10205112	3.73	132	65	133	98	57	128	95	122	130	99	612	555			76	36											
11205112	3.90	136	50	115	84	51	115	56	101	115	83	606	407			57	34	59										
12205112	3.71	132	54	120	88	55	123	91	109	120	91	482	555			79	33	47										
13205112	3.95	128	65	133	98	34	83	14	99	114	81	697	555			79	35	56	50					22				
14205112	4.00	131	59	123	93	53	119	86	112	122	93	573	678			82												
15205112	3.66	127	49	125	83	47	107	62	96	112	78	475	581			99	36											
16205101	3.47	123	50	115	84	57	126	95	107	119	89					68	35	49						20				
17205101	3.77	123	44	110	75	54	115	88	95	111	77					94	24	52										
18205101	4.00	137	52	118	90	47	108	80	99	115	90					88	31	63	48	25								
19205101	4.00	136	58	127	95	45	106	60	103	120	90					53	34											
20205102	3.81	130	48	118	90	49	115	80	97	117	80					99	26	57										
21205101	3.25	112	41	109	80	50	113	80	91	110	80						24											

TABLE A-XVI

DATA FOR HIGH SCHOOL NO. 206

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary S									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	MPT	R.S.	I.Q.	MPT	R.S.	I.Q.	MPT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01206121	3.70	126	58	123	98	60	136	99	118	128	97	518	635			83	-	58										
02206121	4.00	133	62	128	96	52	127	83	114	124	96	580	609			61		61										
03206121	3.38	128	44	110	75	55	123	91	99	114	81	515	712	544	609	89	28	41	44									
04206121	3.54	126	60	124	94	52	127	83	112	122	93	608	594	651	677	79	44							21				
05206122	3.48	120	57	122	91	53	119	86	110	121	91	544	570	547	598	88	50	54										
06206122	3.33	124	51	116	85	50	122	76	101	115	83	489	591	507	580	93	43	58						22				
07206122	3.85	132	65	133	98	56	125	93	121	129	98	576	659	618	633	62	33	47	38					23				
08206111	3.52	124	61	126	95	56	125	93	117	126	96					70	33	43	36	11				17				
09206111	3.71	110	57	122	91	51	115	80	108	120	90	495	660			89	28	50	35	14								
10206111	3.50	129	45	111	77	57	128	95	102	116	85	410	546			79	25											
11206112	3.24	119	55	120	89	49	130	72	104	117	87	534	511			61	30	27										
12206112	3.78	120	51	116	85	58	130	97	109	120	91	514	476			70	44	53						16				
13206112	3.41	118	47	112	80	51	115	80	98	113	80					83	28	30						19				
14206112	3.45	121	51	116	85	52	117	83	103	117	86	501	476			69	47	35						19	11			
15206112	3.54	127	52	117	86	53	119	86	105	118	88					83	27	42										
16206112	3.31	123	46	111	78	53	119	86	99	114	81	371	457	495	520	67	35	42										
17206102	3.70	120	41	111	80	49	113	80	90	112	80					84	43	47										
18206101	4.00	127	46	118	80	46	111	70	92	116	80					74												
19206102	4.00	125	56	121	90	50	112	76	106	119	89					76	36	58	40					18	15			
20206102	3.37	124	56	127	95	47	113	80	103	122	90					76												
21206102	4.00	118	48	116	90	53	121	90	101	117	90						37							20	11			
22206102	3.20	120	54	122	95	51	117	70	105	120	90						47							18				

TABLE A - XVII

DATA FOR HIGH SCHOOL NO. 207

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary 3									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01207122	3.48	120	48	113	81	51	115	80	99	114	81	508	474	546	545	83												
02207123	3.50	131	62	128	96	56	125	93	118	128	97	554	510	579	571	85												
03207122	3.53	120														79												
04207121	3.90	130	76	168	99	54	121	89	130	141	99	657	770	696	782	79	37	62	45	24				21				
05207121	3.68	125	53	118	87	56	125	93	109	120	91	528	636	566	615	83		26										
06207122	3.76	133	75	164	99	54	121	89	129	140	99	728	636	735	659	60												
07207121	3.64	132	60	124	94	52	117	83	112	122	93	515	681	579	650	71												
08207111	3.30	124	58	123	92	56	125	93	114	124	94	613	696	598	738	78	30											
09207112	3.78	118	65	133	98	55	123	91	120	129	98					71	50	60	37	12	28			21	15	15	17	43
10207112	3.78	127	59	123	93	46	105	57	105	118	88	559	562	671	555	62												
11207111	3.99	134	72	153	99	47	107	62	119	128	97	651	730			75		61	46	22								
12207112	3.46	129	54	120	88	51	115	80	105	118	88					59		60	44	9	29			20	15	15		
13207112	3.27	132	52	117	86	53	119	86	105	118	88	632	511			64		62										
14207112	3.61	121										521	563			105		42										
15207112	3.30	121										495	590			55												
16207101	3.46	118	51	117	90	45	104	60	96	114	80					70	50											
17207101	3.40	130	56	121	90	55	123	91	111	121	92					64	29	54										
18207102	3.88	131														99		42										
19207102	3.74	133	57	124	95	51	117	90	108	122	95					47	39	34						22				
20207102	3.64	131	53	121	90	53	128	90	106	122	90					49	31	47										
23207112	3.89	141	66	135	98	61	140	99	127	137	99	651	626											19				
24207112	3.81	135	68	141	99	55	123	91	123	131	99						45							23	16	18	19	40
25207102	3.28	121															45											
26207112	3.52	120	56	121	90	46	105	57	102	115	85													17				
27207102	3.12	121	43	109	72	53	119	86	96	112	78													19				
28207108	2.96	132	53	118	90	41	96	50	94	112	80						44											
29207111	3.35	117	48	113	[illegible]	50	112	76	98	113	80	468	581				40	47	31									

TABLE A - XVIII

DATA FOR HIGH SCHOOL NO. 208

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF MENTAL MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math.	Program Material	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.	Attitude	Attitude	Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01208121	3.40	118	67	138	99	48	109	68	115	124	95	703	663	681	574	88	41	61	45	18	29			21	15	16	19	38
02208121	3.58	119	66	135	98	47	107	62	113	123	94	541	555	566	580	63	37	60	38	24				21	13	12		
03208121	3.50	122	63	129	96	53	118	86	116	126	95	641	610	654	695	63	45	57										
04208122	3.75	114	45	111	77	55	123	91	100	115	82					92	54	22	38									
05208122	4.00	109	48	113	81	55	123	91	103	117	86					89		50										
06208122	4.00	124	66	135	98	54	121	89	120	129	98	699	529			47	48	59	20	45	23			22	15	18		
07208112	4.00	119	50	115	84	54	121	89	104	117	87	527	581			60	37	56						21				
08208111	3.60	132	48	113	81	56	125	93	104	117	87	482	642			99	31											
09208112	3.30	125	46	111	78	41	96	38	87	107	66					73	32	36						20				
10208112	3.30	119	40	107	66	55	123	91	95	111	77	423	432			83	25	34						16				
11208111	3.20	125	45	111	77	48	109	68	93	110	74	547	493			89	28											
12208112	3.80	122	46	111	78	35	85	17	81	103	54	436	493			84	38	19						12				
13208112	3.70	122	44	110	75	54	121	89	98	113	80	423	590			83	38											
14208111	3.60	128	60	124	94	55	123	91	115	124	95	560	625			89	23											
15208111	4.30	131														71												
16208101	3.80	117	42	113	80	33	84	20	75	101	50					99	27	58	32					16				
17208102	3.40	131	53	118	90	50	113	80	103	117	90					79	38	29										
18208101	3.20	123	40	108	80	53	119	90	93	111	80					89		45	15									
19208101	3.40	124	36	109	60	48	115	80	84	111	70					71	44											
20208101	4.00	125	51	121	90	53	125	90	104	122	90					79	48	60	46	22								
22208112	3.50	112										514	563											15				

TABLE A-XIX

DATA FOR HIGH SCHOOL NO. 209

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	[illegible] (Short Form) Secondary B									O.R.R.S. (First)		O.R.R.S. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	NPT	R.S.	I.Q.	NPT	R.S.	I.Q.	NPT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01209121	3.93	125	56	121	90	58	130	97	114	124	94	618	595	631	650	80												
02209122	3.85	125	66	135	98	51	115	80	117	126	96	696	636	722	686	79												
03209122	3.42	123										515	582	501	633	49												
04209121	3.40	126	57	122	91	50	112	76	107	119	89	573	717	598	694	78												
05209122	3.47	125	57	122	91	52	117	83	109	120	91	554	582			88												
06209121	3.73	132	62	128	96	53	119	86	115	124	95	547	627	644	571	70												
07209122	3.91	127	62	128	96	58	130	97	120	129	98	638	546	657	659	71	28	57										
08209122	3.66	124	48	113	81	53	119	86	101	115	83	424	663	488	580	89												
09209121	3.33	136	61	126	95	53	119	86	114	124	94	625	717	651	703	93												
10209111	4.00	123	59	123	93	53	119	86	112	122	93	664	642			88	50	65	50	20								
11209111	3.70	123	49	115	83	58	130	97	107	119	89	527	581			79												
12209111	3.50	123										625	598			80	38	47	36	17				22				
13209112	4.00	127	58	123	92	54	121	89	117	122	93	632	716			56	48	64										
14209111	3.80	131	44	110	75	50	112	76	94	111	76	495	563			83	41											
15209102	3.75	130	57	125	95	41	98	50	98	117	90					79	34							20				
16209102	3.60	127														92												
17209102	3.85	131	44	115	80	35	89	30	79	105	60					74	23							16				
18209102	3.60	131	54	123	95	56	129	98	110	124	95	540	651			93												
19209101	3.42	129	52	117	86	51	115	80	103	117	86					73	43	64	45	13				20	13			
20209101	4.00	134	64	130	97	53	119	86	117	126	96					76	29	55						20				
21209121	3.06	132	65	133	98	49	110	72	114	124	94	703	627	683	659													
22209112	3.15	124	49	115	81	50	112	76	99	114	81	553	563				55							15				
23209112	3.27	120	46	111	78	52	117	83	98	113	80	514	493				30							18				
24209102	3.00	125															44							19				
25209101	3.66	119															33							14				
26209102	3.28	128	56	104	60	52	117	90	88	109	80																	
27209101	2.78	122	48	120	90	45	111	70	94	118	80																	
28209101	3.25	117	40	111	80	44	105	60	84	109	70													15				

TABLE A-XX

DATA FOR HIGH SCHOOL NO. 210

(PERSONAL AND PERFORMANCE)

Student Number (Project)	Q.P. Average	School's I.Q.	TEST OF [illegible] MATURITY (Short Form) Secondary B									C.E.E.B. (First)		C.E.E.B. (Second)		Math. Attitude	Program Material Attitude	INTRODUCTORY DESCRIPTIVE STATISTICS						HUMAN BEHAVIOR				
			Language			Non-Language			Total																			
			R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	R.S.	I.Q.	PCT	Language	Math.	Language	Math.			Test I	Test II	Test III	Test IV	Test V	Final	Test I	Test II	Test III	Test IV	Final
01210121	3.56	135	57	122	91	63	146	99	120	129	98	554	636	494	703	92		56						19				
02210121	3.41	123	40	107	66	49	110	72	89	108	69	456	402	449	586	98	34	55	37	16								
03210121	3.34	122	60	124	94	43	99	46	103	117	86	573	510	664	554	76	28	55										
04210121	3.84	124	61	126	95	57	128	95	118	128	97	586	537	631	624	79	35	54	37									
05210111	3.63	123	48	113	81	47	107	62	95	111	77	442	458			65	35	55						22	8	16		
06210111	3.57	125	58	123	92	47	107	62	105	108	88	521	563			71	32	43	20					19	12	9	9	28
07210112	3.78	132	69	143	99	53	119	86	122	130	99	611	633			89	36	51	42					22				
08210111	3.52	132	63	129	96	59	133	98	122	130	99	501	625			71	35							19				
09210111	3.71	120	42	109	70	48	109	68	90	109	70	475	537			93	39											
10210112	3.38	124	50	115	84	44	101	50	94	111	76					78		49						22	7	15	18	25
11210111	3.71	122	46	111	78	52	117	83	98	113	80	449	493			79	30	62	38									
12210112	3.43	124	55	120	89	47	107	62	102	116	85	527	563			73	39	59						18	10	14	13	23
13210101	3.52	124	50	115	84	54	121	85	104	117	87					82	34	50	45					18				
14210102	3.56	130	55	124	95	49	115	80	104	121	90					62	36	51	28					17	13	12	17	26
15210101	3.86	128	47	112	80	59	133	98	106	119	89					65	23	52						19				
16210112	3.81	116	50	115	84	44	101	50	94	111	76	449	502			56		53	21					21				
17210102	3.76	129														76		49	41									
18210102	3.93	127	52	120	90	57	131	98	109	123	95					93	29	57	36					18				
19210102	3.93	125	48	115	90	55	125	95	103	119	90					69	29	53	46					21				
20210102	3.75	121	50	115	84	47	107	62	97	112	79					88	39	60	45					21	9			

APPENDIX B

MEANS, STANDARD DEVIATIONS, AND STANDARD ERRORS OF MEANS

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TABLE B - I

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(OBTAINED FROM MATHEMATICS ATTITUDE SCALE)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	151	76.118	13.385	1.874
Grade 10, Girls	72	72.417	15.519	1.829
Grade 10, Total	123	73.951	14.729	1.328
Grade 11, Boys	46	74.674	14.822	2.185
Grade 11, Girls	88	72.341	15.541	1.657
Grade 11, Total	134	73.142	15.283	1.320
Grade 12, Boys	66	78.348	14.216	1.750
Grade 12, Girls	79	71.899	15.576	1.752
Grade 12, Total	145	74.834	15.265	1.268
Grades 10-12, Boys	163	76.613	14.134	1.107
Grades 10-12, Girls	239	72.218	15.482	1.001
Grades 10-12, Total	402	74.000	15.088	.753

TABLE B - II

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(OBTAINED FROM PROGRAMMED LEARNING ATTITUDE SCALE)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	54	37.333	9.413	1.281
Grade 10, Girls	73	37.989	7.292	.854
Grade 10, Total	127	37.709	8.232	.730
Grade 11, Boys	44	35.819	6.886	1.038
Grade 11, Girls	88	35.879	5.595	.839
Grade 11, Total	132	35.858	7.327	.653
Grade 12, Boys	47	35.789	7.596	1.108
Grade 12, Girls	65	34.939	9.753	1.210
Grade 12, Total	112	34.983	9.447	.889
Grades 10-12, Boys	145	36.013	8.147	.663
Grades 10-12, Girls	226	36.551	8.228	.562
Grades 10-12, Total	371	36.329	8.187	.429

TABLE B - III

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(OBTAINED FROM TEST NO. I, INTRODUCTORY DESCRIPTIVE STATISTICS)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	43	50.209	11.902	1.815
Grade 10, Girls	56	50.357	9.617	1.285
Grade 10, Total	99	50.293	10.612	1.067
Grade 11, Boys	31	49.710	9.836	1.767
Grade 11, Girls	72	49.153	12.344	1.455
Grade 11, Total	103	49.320	11.601	1.143
Grade 12, Boys	40	50.325	12.755	2.017
Grade 12, Girls	57	50.368	11.293	1.496
Grade 12, Total	97	50.351	11.852	1.203
Grades 10-12, Boys	114	50.114	11.599	1.086
Grades 10-12, Girls	185	49.892	11.207	.824
Grades 10-12, Total	299	49.977	11.340	.656

TABLE B - IV

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(OBTAINED FROM TEST NO. 2, INTRODUCTORY DESCRIPTIVE STATISTICS)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	19	37.526	8.815	2.022
Grade 10, Girls	20	36.400	7.327	1.637
Grade 10, Total	39	36.949	7.997	1.280
Grade 11, Boys	21	38.810	7.574	1.653
Grade 11, Girls	23	37.087	8.426	1.757
Grade 11, Total	44	36.477	7.964	1.201
Grade 12, Boys	18	41.889	7.095	1.672
Grade 12, Girls	17	37.529	8.210	2.013
Grade 12, Total	35	39.771	7.904	1.336
Grades 10-12, Boys	58	38.259	8.138	1.069
Grades 10-12, Girls	60	36.983	7.914	1.217
Grades 10-12, Total	118	37.610	8.016	.738

TABLE B - V

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(I.Q., OBTAINED FROM HIGH SCHOOL RECORDS)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	58	127.017	7.459	.979
Grade 10, Girls	81	125.062	5.105	.567
Grade 10, Total	139	125.878	6.247	.530
Grade 11, Boys	49	122.898	5.075	.725
Grade 11, Girls	99	124.869	6.468	.650
Grade 11, Total	148	124.216	6.096	.501
Grade 12, Boys	67	126.209	6.311	.771
Grade 12, Girls	80	125.775	6.430	.719
Grade 12, Total	147	125.973	6.358	.524
Grades 10-12, Boys	174	125.546	6.600	.500
Grades 10-12, Girls	260	125.208	6.053	.375
Grades 10-12, Total	434	125.343	6.272	.301

TABLE B - VI

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN
(TOTAL, I.Q., OBTAINED FROM MENTAL ABILITY TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	55	119.545	8.071	1.088
Grade 10, Girls	70	117.143	6.968	.333
Grade 10, Total	125	118.200	7.538	.674
Grade 11, Boys	45	119.244	7.438	1.109
Grade 11, Girls	91	117.351	7.009	.735
Grade 11, Total	136	117.978	7.182	.616
Grade 12, Boys	62	122.661	6.961	.884
Grade 12, Girls	71	120.662	7.343	.871
Grade 12, Total	133	121.594	7.210	.625
Grades 10-12, Boys	162	120.654	7.606	.598
Grades 10-12, Girls	232	118.302	7.243	.475
Grades 10-12, Total	394	119.269	7.475	.377

TABLE B - VII

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN (LANGUAGE I.Q., OBTAINED FROM MENTAL ABILITY TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	55	119.418	9.451	1.274
Grade 10, Girls	70	118.286	7.177	.858
Grade 10, Total	125	118.784	8.238	.737
Grade 11, Boys	45	120.867	10.638	1.586
Grade 11, Girls	91	119.098	8.765	.919
Grade 11, Total	136	119.684	9.425	.808
Grade 12, Boys	62	125.451	11.812	1.500
Grade 12, Girls	71	122.436	11.034	1.310
Grade 12, Total	133	123.842	11.460	.993
Grades 10-12, Boys	162	122.129	10.998	.864
Grades 10-12, Girls	232	119.875	9.233	.606
Grades 10-12, Total	394	120.802	10.045	.506

TABLE B - VIII

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN (NON-LANGUAGE I.Q., OBTAINED FROM MENTAL ABILITY TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	55	120.509	12.293	1.658
Grade 10, Girls	70	115.329	11.967	1.430
Grade 10, Total	125	117.608	12.335	1.103
Grade 11, Boys	45	117.822	9.576	1.427
Grade 11, Girls	91	114.429	11.051	1.159
Grade 11, Total	136	115.551	10.671	.915
Grade 12, Boys	62	119.210	11.616	1.475
Grade 12, Girls	71	119.014	9.662	1.147
Grade 12, Total	133	119.105	10.577	.917
Grades 10-12, Boys	162	119.265	11.313	.889
Grades 10-12, Girls	232	116.103	11.070	.727
Grades 10-12, Total	394	117.404	11.264	.567

TABLE B - IX

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN (LANGUAGE RAW SCORE OBTAINED FROM MENTAL ABILITY TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	55	50.800	7.150	.964
Grade 10, Girls	70	49.743	7.217	.863
Grade 10, Total	125	50.208	7.176	.642
Grade 11, Boys	45	54.333	8.689	1.295
Grade 11, Girls	91	53.165	7.960	.834
Grade 11, Total	136	53.551	8.195	.703
Grade 12, Boys	62	58.435	7.550	.946
Grade 12, Girls	71	55.887	8.503	1.009
Grade 12, Total	133	57.075	8.100	.702
Grades 10-12, Boys	162	54.704	8.332	.655
Grades 10-12, Girls	232	52.966	8.242	.541
Grades 10-12, Total	394	53.680	8.313	.419

TABLE B - X

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN (NON-LANGUAGE RAW SCORE OBTAINED FROM MENTAL ABILITY TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	55	52.019	5.952	.803
Grade 10, Girls	70	49.657	5.746	.687
Grade 10, Total	125	50.696	5.931	.531
Grade 11, Boys	45	52.288	4.639	.692
Grade 11, Girls	91	50.604	5.459	.572
Grade 11, Total	136	51.162	5.245	.450
Grade 12, Boys	62	52.871	5.693	.723
Grade 12, Girls	71	52.859	4.642	.551
Grade 12, Total	133	52.865	5.139	.446
Grades 10-12, Boys	162	52.420	5.494	.432
Grades 10-12, Girls	232	51.009	5.447	.358
Grades 10-12, Total	394	51.588	5.504	.277

TABLE B - XI

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN (TOTAL RAW SCORE, OBTAINED FROM MENTAL ABILITY TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	55	102.818	10.527	1.419
Grade 10, Girls	70	99.400	10.272	1.228
Grade 10, Total	125	100.904	10.482	.937
Grade 11, Boys	45	106.622	11.920	1.627
Grade 11, Girls	91	103.769	10.176	1.067
Grade 11, Total	136	104.713	10.475	.898
Grade 12, Boys	62	111.306	9.055	1.150
Grade 12, Girls	71	108.606	10.281	1.220
Grade 12, Total	133	109.865	9.786	.849
Grades 10-12, Boys	162	107.123	10.675	.839
Grades 10-12, Girls	232	103.931	10.809	.710
Grades 10-12, Total	394	105.244	10.855	.547

TABLE B - XII

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(OBTAINED FROM TEST NO. I, HUMAN BEHAVIOR)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	24	18.417	2.518	.514
Grade 10, Girls	37	19.000	2.769	.455
Grade 10, Total	61	18.770	2.667	.341
Grade 11, Boys	18	20.111	1.711	.403
Grade 11, Girls	42	18.976	2.464	.380
Grade 11, Total	60	19.317	2.311	.298
Grade 12, Boys	18	19.444	2.662	.627
Grade 12, Girls	14	19.786	3.167	.846
Grade 12, Total	32	19.594	2.850	.504
Grades 10-12, Boys	60	19.233	2.424	.313
Grades 10-12, Girls	93	19.108	2.684	.278
Grades 10-12, Total	153	19.157	2.578	.208

TABLE B - XIII

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(VERBAL SCORES, OBTAINED FROM COLLEGE ENTRANCE TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	2	568.500	53.033	37.500
Grade 10, Girls	7	477.857	48.123	18.189
Grade 10, Total	9	498.000	60.712	20.237
Grade 11, Boys	44	537.409	71.065	10.714
Grade 11, Girls	78	532.615	77.305	8.753
Grade 11, Total	122	534.344	74.853	6.777
Grade 12, Boys	64	551.766	73.123	9.140
Grade 12, Girls	72	534.944	77.833	9.173
Grade 12, Total	136	542.860	75.844	6.504
Grades 10-12, Boys	110	546.327	71.882	6.854
Grades 10-12, Girls	157	531.242	77.014	6.146
Grades 10-12, Total	267	537.457	75.173	4.601

TABLE B - XIV

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(MATH SCORES, OBTAINED FROM COLLEGE ENTRANCE TEST)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	2	568.500	77.782	5.000
Grade 10, Girls	7	496.000	99.810	37.725
Grade 10, Total	9	512.111	92.201	30.734
Grade 11, Boys	44	587.977	69.813	10.525
Grade 11, Girls	78	550.603	67.643	7.659
Grade 11, Total	122	564.082	70.488	6.382
Grade 12, Boys	64	601.047	73.394	9.174
Grade 12, Girls	72	555.111	65.004	7.661
Grade 12, Total	136	576.728	72.565	6.222
Grade 10-12, Boys	110	595.227	71.350	6.803
Grades 10-12, Girls	157	550.236	68.613	5.476
Grades 10-12, Total	267	568.772	73.070	4.472

TABLE B - XV

MEAN, STANDARD DEVIATION, AND STANDARD ERROR OF MEAN

(QUALITY POINT AVERAGES, OBTAINED FROM HIGH SCHOOL RECORDS)

STUDENT GROUPS	NUMBER	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Grade 10, Boys	58	3.590	.321	.042
Grade 10, Girls	81	3.645	.302	.034
Grade 10, Total	139	3.622	.310	.026
Grade 11, Boys	49	3.473	.292	.042
Grade 11, Girls	99	3.587	.286	.029
Grade 11, Total	148	3.549	.292	.024
Grade 12, Boys	67	3.454	.307	.037
Grade 12, Girls	80	3.562	.266	.030
Grade 12, Total	147	3.512	.289	.024
Grade 10-12, Boys	174	3.505	.312	.024
Grade 10-12, Girls	260	3.597	.286	.018
Grade 10-12, Total	434	3.560	.300	.014

TABLE B--XVI

CRITICAL RATIO TABLE

		Mental Maturity							College Entrance		School		Human Behavior	Statistics	
	Math Att.	Language R.S.	Language I.Q.	Non-Lang R.S.	Non-Lang I.Q.	Total R.S.	Total I.Q.	Prog Learn	Verbal	Math	I.Q.	G.P.A.	Test I	Test I	Test II
Grade 10-Grade 11	.43	-4.31	-1.61	-.76	1.33	-2.91	.24	1.89	-1.70	-1.66	2.28	2.05	-1.21	.62	.27
Grade 10-Grade 12	-.48	-6.56	-3.56	-3.19	-1.11	-7.09	-3.71	2.37	-2.11	-2.06	-.13	3.06	-1.35	-.04	-1.53
Grade 10-Boys	-1.54	-4.90	-2.95	-2.57	-1.23	-4.94	-2.74	1.72	-2.26	-2.64	.46	3.29	-1.00	.12	-.79
Grade 10-Girls	1.04	-3.29	-1.14	-.54	1.08	-2.56	-.13	1.26	-1.57	-1.22	1.03	.78	-.77	.05	-.02
Grade 10-Total	-.03	-4.53	-2.26	-1.55	.10	-3.99	-1.39	1.63	-1.90	-1.82	.88	2.08	-.97	.25	-.45
Grade 11-Grade 12	-.92	-2.46	-2.07	-2.63	-2.69	-4.15	-4.11	.79	-.91	-1.42	-2.42	1.06	-.47	-.62	-1.83
Grade 11-Boys	-2.01	-.51	-1.31	-1.96	-2.85	-1.95	-3.11	-.17	-1.24	-3.34	-1.88	1.30	.19	-.50	-1.11
Grade 11-Girls	.56	1.45	.67	.32	-.42	.68	-.41	-.81	.34	1.65	-1.59	-1.60	.51	-.07	-.30
Grade 11-Total	-.56	.68	-.25	-.75	-1.66	-.50	-1.78	-.60	-.38	-.60	-1.93	-.40	.44	-.50	-.80
Grade 12-Boys	-1.06	2.00	.86	.72	-.13	2.30	1.09	-.93	-.37	-2.01	.59	.24	.61	.15	.88
Grade 12-Girls	1.62	4.03	2.86	3.25	2.57	5.36	4.19	-1.49	1.30	3.20	1.19	-2.80	.84	.06	1.54
Grade 12-Total	.57	3.51	2.17	2.43	1.58	4.58	3.39	-1.36	.68	1.04	1.04	-1.69	.80	.27	1.42
Boys-Girls	2.94	2.05	2.14	2.51	2.75	2.90	3.08	-.62	1.64	5.15	.51	-3.07	.30	.03	.79
Boys-Total	1.95	1.32	1.33	1.62	1.76	1.88	1.96	-.40	1.07	3.25	.35	-1.98	.20	.11	.50
Girls-Total	-1.42	-1.04	-1.17	-1.28	-1.41	-1.46	-1.59	.31	-.81	-2.68	-.28	1.62	-.14	-.01	-.44

APPENDIX C

CORRELATION TABLES

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GRADE 10

CORRELATION TABLES

	Math Attitude	Mental Maturity						Programmed Materials Att.	CEEB		High School		Human Behavior I	Statistics	
		Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.		Verbal	Math	I.Q.	Q.P.A.		Test I	Test II
Math Attitude		-.06	-.05	-.03	-.01	-.04	-.05	-.09	.71	.58	-.09	.09	-.03	.28	.05
Language R.S.	-.06		.86	.29	.27	.81	.76	.05	.56	.45	.29	.27	.16	.35	.20
Language I.Q.	-.05	.86		.17	.22	.69	.79	.12	.24	.12	.34	.21	.11	.23	.18
Non Lang. R.S.	-.03	.29	.17		.92	.71	.60	.04	.14	.46	.17	.02	.28	.05	.09
Non Lang. I.Q.	-.01	.27	.22	.92		.69	.65	.07	-.00	.34	.15	.03	.28	-.01	.06
Total R.S.	-.04	.81	.69	.71	.69		.84	.05	.44	.51	.31	.19	.27	.22	.17
Total I.Q.	-.05	.76	.79	.60	.65	.84		.12	.12	.35	.34	.16	.21	.18	.21
Programmed Materials Att.	-.09	.05	.12	.04	.07	.05	.12		.18	.66	.03	-.31	-.14	-.13	-.03
CEEB Verbal	.71	.56	.24	.14	-.00	.44	.12	.18		.72	-.11	-.31	-.16	-.05	None
CEEB Math	.58	.45	.12	.46	.34	.51	.35	.66	.72		.01	-.40	-.31	.20	None
High School I.Q.	-.09	.29	.34	.17	.15	.31	.34	.03	-.11	.01		.03	.28	.16	.12
High School Q.P.A.	.09	.27	.21	.02	.03	.19	.16	-.31	-.31	-.40	.03		.22	.46	.46
Human Behavior I	-.03	.16	.11	.28	.28	.27	.21	-.14	-.16	-.31	.28	.22		.26	.19
Statistics Test I	.28	.35	.23	.05	-.01	.22	.18	-.13	-.05	.20	.16	.46	.26		.43
Statistics Test II	.05	.20	.18	.09	.06	.17	.21	-.03	None	None	.12	.46	.19	.43	

TABLE C - 1

GRADE 11

CORRELATION TABLES

	Math Attitude	Mental Maturity						Programmed Materials Att.	CEEB		High School		Human Behavior I	Statistics	
		Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.		Verbal	Math	I.Q.	Q.P.A.		Test I	Test II
Math Attitude		-.11	-.11	.01	.03	-.07	-.10	.04	-.08	.03	.10	.12	.31	.09	.22
Language R.S.	-.11		.92	.17	.16	.82	.81	.09	.62	.45	.39	.29	.28	.39	.12
Language I.Q.	-.11	.92		.18	.18	.79	.81	.19	.66	.44	.38	.26	.29	.36	.18
Non Lang. R.S.	.01	.17	.18		.97	.60	.55	.16	.09	.40	.28	.11	.14	.20	.09
Non Lang. I.Q.	.03	.16	.18	.97		.60	.55	.16	.08	.43	.29	.13	.16	.19	.12
Total R.S.	-.07	.82	.79	.60	.60		.90	.13	.56	.57	.44	.28	.24	.36	.18
Total I.Q.	-.10	.81	.81	.55	.55	.90		.10	.57	.54	.47	.23	.23	.29	.04
Programmed Materials Att.	.04	.09	.19	.16	.16	.13	.10		.26	.07	.06	-.00	-.09	.17	.39
CEEB Verbal	-.08	.62	.66	.09	.08	.56	.57	.26		.33	.36	.18	.25	.40	.50
CEEB Math	.03	.45	.44	.40	.43	.57	.54	.07	.33		.32	.25	.41	.30	.41
High School I.Q.	.10	.39	.38	.28	.29	.44	.47	.06	.36	.32		.23	.25	.17	.34
High School Q.P.A.	.12	.29	.26	.11	.13	.28	.23	-.00	.18	.25	.23		.28	.34	.23
Human Behavior I	.31	.28	.29	.14	.16	.24	.23	-.09	.25	.41	.25	.28		.53	.50
Statistics Test I	.09	.39	.36	.20	.19	.36	.29	.17	.40	.30	.17	.34	.53		.58
Statistics Test II	.22	.12	.18	.09	.12	.18	.04	.39	.50	.41	.34	.23	.50	.58	

TABLE C - 2

GRADE 12

CORRELATION TABLES

	Math Attitude	Mental Maturity						Programmed Materials Att.	CEEB		High School		Human Behavior I	Statistics	
		Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.		Verbal	Math	I.Q.	Q.P.A.		Test I	Test II
Math Attitude		-.12	-.08	.07	.10	-.05	-.05	.08	-.13	.28	.01	.04	-.24	.06	.26
Language R.S.	-.12		.88	-.02	-.01	.78	.78	-.06	.73	.36	.29	.30	.37	.54	.29
Language I.Q.	-.08	.88		.01	.02	.73	.79	-.05	.67	.37	.32	.34	.27	.47	.31
Non Lang. R.S.	.07	-.02	.01		.97	.51	.48	-.14	-.11	.26	.30	.12	.20	-.00	-.10
Non Lang. I.Q.	.10	-.01	.02	.97		.50	.48	-.15	-.07	.30	.31	.11	.13	.02	-.08
Total R.S.	-.05	.78	.73	.51	.50		.89	-.16	.55	.46	.44	.34	.31	.43	.24
Total I.Q.	-.05	.78	.79	.48	.48	.89		-.17	.53	.44	.37	.26	.29	.41	.21
Programmed Materials Att.	.08	-.06	-.05	-.14	-.15	-.16	-.17		-.02	-.01	-.25	.05	.30	.00	.19
CEEB Verbal	-.13	.73	.67	-.11	-.07	.55	.53	-.02		.29	.27	.28	.23	.38	.13
CEEB Math	.28	.36	.37	.26	.30	.46	.44	-.01	.29		.41	.14	.07	.32	.41
High School I.Q.	.01	.29	.32	.30	.31	.44	.37	-.25	.27	.41		.13	.13	.37	.27
High School Q.P.A.	.04	.30	.34	.12	.11	.34	.26	.05	.28	.14	.13		.38	.51	.13
Human Behavior I	-.24	.37	.27	.20	.13	.31	.29	.30	.23	.07	.13	.38		.44	.19
Statistics Test I	.06	.54	.47	-.00	.02	.43	.41	.00	.38	.32	.37	.51	.44		.47
Statistics Test II	.26	.29	.31	-.10	-.08	.24	.21	.19	.13	.41	.27	.13	.19	.47	

TABLE C - 3

BOYS

CORRELATION TABLES

		Mental Maturity							CEEB		High School			Statistics	
	Math Attitude	Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.	Programmed Materials Att.	Verbal	Math	I.Q.	Q.P.A.	Human Behavior I	Test I	Test II
Math Attitude		-.07	-.06	-.04	-.05	-.07	-.05	-.09	-.16	.11	.02	.11	-.14	.19	.05
Language R.S.	-.07		.86	.14	.09	.81	.77	.07	.65	.41	.28	.23	.17	.42	.28
Language I.Q.	-.06	.86		.08	.08	.72	.81	.10	.62	.37	.34	.27	.04	.36	.30
Non Lang. R.S.	-.04	.14	.08		.95	.60	.51	-.00	-.06	.33	.30	.06	.13	-.03	.02
Non Lang. I.Q.	-.05	.09	.08	.95		.56	.52	.02	-.04	.34	.30	.10	.11	-.01	.03
Total R.S.	-.07	.81	.72	.60	.56		.87	.03	.52	.51	.37	.23	.14	.28	.21
Total I.Q.	-.05	.77	.81	.51	.52	.87		.05	.54	.47	.46	.22	.04	.29	.21
Programmed Materials Att.	-.09	.07	.10	-.00	.02	.03	.05		.17	-.03	-.03	-.09	.06	.03	.34
CEEB Verbal	-.16	.65	.63	-.06	-.04	.52	.54	.17		.22	.34	.15	.09	.31	.43
CEEB Math	.11	.41	.37	.33	.34	.51	.47	-.03	.22		.39	.11	-.11	.21	.39
High School I.Q.	.02	.28	.34	.30	.30	.37	.46	-.03	.34	.39		.21	.06	.27	.32
High School Q.P.A.	.11	.23	.27	.06	.10	.23	.22	-.09	.15	.11	.21		.19	.55	.33
Human Behavior I	-.14	.17	.04	.13	.11	.14	.04	.06	.09	-.11	.06	.19		.38	.23
Statistics Test I	.19	.42	.36	-.03	-.01	.28	.29	.03	.31	.21	.27	.55	.38		.57
Statistics Test II	.05	.28	.30	.02	.03	.21	.21	.34	.43	.39	.32	.33	.23	.57	

TABLE C - 4

GIRLS

CORRELATION TABLES

	Math Attitude	Mental Maturity						Programmed Materials Att.	CEEB		High School		Human Behavior I	Statistics	
		Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.		Verbal	Math	I.Q.	Q.P.A.		Test I	Test II
Math Attitude		-.12	-.11	.04	.01	-.07	-.10	.07	-.04	.19	.10	.10	.13	.00	.31
Language R.S.	-.12		.89	.21	.18	.82	.78	-.07	.66	.39	.32	.24	.35	.41	.12
Language I.Q.	-.11	.89		.17	.20	.74	.79	.03	.65	.39	.36	.25	.40	.37	.15
Non Lang. R.S.	.04	.21	.17		.95	.62	.58	.01	.02	.33	.21	.09	.29	.17	.07
Non Lang. I.Q.	.01	.18	.20	.95		.60	.60	.03	.00	.33	.22	.10	.28	.11	.07
Total R.S.	-.07	.82	.74	.62	.60		.87	-.07	.52	.49	.38	.22	.38	.36	.19
Total I.Q.	-.10	.78	.79	.58	.60	.87		-.02	.49	.46	.35	.21	.38	.30	.07
Programmed Materials Att.	.07	-.07	.03	.01	.03	-.07	-.02		.04	.05	-.06	.06	-.08	-.01	.01
CEEB Verbal	-.04	.66	.65	.02	.00	.52	.49	.04		.39	.30	.29	.31	.44	.20
CEEB Math	.19	.39	.39	.33	.33	.49	.46	.05	.39		.41	.31	.48	.42	.42
High School I.Q.	.10	.32	.36	.21	.22	.38	.35	-.06	.30	.41		.07	.32	.22	.20
High School Q.P.A.	.10	.24	.25	.09	.10	.22	.21	.06	.29	.31	.07		.28	.35	.25
Human Behavior I	.13	.35	.40	.29	.28	.38	.38	-.08	.31	.48	.32	.28		.42	.34
Statistics Test I	.00	.41	.37	.17	.11	.36	.30	-.01	.44	.42	.22	.35	.42		.37
Statistics Test II	.31	.12	.15	.07	.07	.19	.07	.01	.20	.42	.20	.25	.34	.37	

TABLE C - 5

AREA I

CORRELATION TABLES

	Math Attitude	Mental Maturity						Programmed Materials Att.	CEEB		High School		Human Behavior I	Statistics	
		Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.		Verbal	Math	I.Q.	Q.P.A.		Test I	Test II
Math Attitude		-.03	.06	.04	.04	-.02	-.06	.05	-.15	.16	-.10	.11	.01	.03	.15
Language R.S.	-.03		.87	.12	.09	.81	.74	.05	.58	.36	.26	.18	.21	.41	.24
Language I.Q.	.06	.87		.08	.11	.73	.76	.17	.57	.35	.35	.22	.12	.35	.31
Non Lang. R.S.	.04	.12	.08		.94	.57	.54	.03	-.07	.33	.22	-.05	.23	-.02	-.12
Non Lang. I.Q.	.04	.09	.11	.94		.54	.56	.07	-.08	.33	.23	-.02	.23	-.05	-.02
Total R.S.	-.02	.81	.73	.57	.54		.85	.06	.44	.49	.35	.11	.21	.26	.14
Total I.Q.	-.06	.74	.76	.54	.56	.85		.08	.42	.40	.38	.11	.19	.20	.11
Programmed Materials Att.	.05	.05	.17	.03	.07	.06	.08		.10	.13	.05	-.03	-.07	.04	.58
CEEB Verbal	-.15	.58	.57	-.07	-.08	.44	.42	.10		.29	.29	.06	.16	.31	.42
CEEB Math	.16	.36	.35	.33	.33	.49	.40	.13	.29		.28	.10	.21	.35	.38
High School I.Q.	-.10	.26	.35	.22	.23	.35	.38	.05	.29	.28		-.04	.12	.08	.29
High School Q.P.A.	.11	.18	.22	-.05	-.02	.11	.11	-.03	.06	.10	-.04		.25	.45	.18
Human Behavior I	.01	.21	.12	.23	.23	.21	.19	-.07	.16	.21	.12	.25		.44	.27
Statistics Test I	.03	.41	.35	-.02	-.05	.26	.20	.04	.31	.35	.08	.45	.44		.53
Statistics Test II	.15	.24	.31	-.12	-.02	.14	.11	.58	.42	.38	.29	.18	.27	.53	

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AREA II

CORRELATION TABLES

		Mental Maturity							CEEB		High School			Statistics	
	Math Attitude	Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.	Programmed Materials Att.	Verbal	Math	I.Q.	Q.P.A.	Human Behavior I	Test I	Test II
Math Attitude		-.19	-.12	-.03	.04	-.11	-.09	.01	-.06	.18	.02	-.06	.06	.02	.16
Language R.S.	-.19		.87	.25	.21	.83	.81	-.08	.72	.45	.34	.25	.33	.42	.20
Language I.Q.	-.12	.87		.18	.09	.73	.82	-.04	.70	.41	.34	.26	.31	.37	.22
Non Lang. R.S.	-.03	.25	.18		.95	.66	.57	-.01	.04	.34	.27	.19	.22	.19	.12
Non Lang. I.Q.	.04	.21	.19	.95		.63	.59	-.01	.05	.35	.28	.19	.19	.19	.08
Total R.S.	-.11	.83	.73	.66	.63		.88	-.10	.59	.52	.39	.29	.33	.40	.24
Total I.Q.	-.09	.81	.82	.57	.59	.88		-.06	.59	.53	.41	.27	.29	.40	.19
Programmed Materials Att.	.01	-.08	-.04	-.01	-.01	-.10	-.06		.12	-.07	-.10	-.09	.04	.03	-.02
CEEB Verbal	-.06	.72	.70	.04	.05	.59	.59	.12		.32	.25	.29	.30	.41	.26
CEEB Math	.18	.45	.41	.34	.35	.52	.53	-.07	.32		.37	.13	.33	.25	.42
High School I.Q.	.02	.34	.34	.27	.28	.39	.41	-.10	.25	.37		.23	.31	.29	.20
High School Q.P.A.	-.06	.25	.26	.19	.19	.29	.27	-.09	.29	.13	.23		.23	.32	.30
Human Behavior I	.06	.33	.31	.22	.19	.33	.29	.04	.30	.33	.31	.23		.35	.26
Statistics Test I	.02	.42	.37	.19	.19	.40	.40	.03	.41	.25	.29	.32	.35		.45
Statistics Test II	.16	.20	.22	.12	.08	.19	.19	-.02	.26	.42	.20	.30	.26	.45	

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TOTAL

CORRELATION TABLES

	Math Attitude	Mental Maturity						Programmed Materials Att.	CEEB		High School		Human Behavior I	Statistics	
		Language R.S.	Language I.Q.	Non Lang. R.S.	Non Lang. I.Q.	Total R.S.	Total I.Q.		Verbal	Math	I.Q.	Q.P.A.		Test I	Test II
Math Attitude		-.09	-.07	.02	.04	-.04	-.06	.01	-.07	.20	.02	.08	.04	.08	.18
Language R.S.	-.09		.88	.19	.16	.82	.78	-.02	.66	.42	.31	.22	.27	.42	.21
Language I.Q.	-.07	.88		.14	.15	.73	.80	.06	.64	.40	.35	.24	.23	.36	.25
Non Lang. R.S.	.02	.19	.14		.95	.62	.56	.00	.00	.34	.25	.06	.22	.09	.04
Non Lang. I.Q.	.04	.16	.15	.95		.58	.57	.03	-.00	.34	.26	.08	.21	.07	.05
Total R.S.	-.04	.82	.73	.62	.58		.87	.03	.53	.52	.38	.20	.28	.33	.21
Total I.Q.	-.06	.78	.80	.56	.57	.87		.01	.52	.48	.40	.19	.25	.30	.17
Programmed Materials Att.	.01	-.02	.06	.00	.03	.03	.01		.09	.02	-.05	-.07	-.02	.01	.17
CEEB Verbal	-.07	.66	.64	.00	-.00	.53	.52	.09		.33	.31	.20	.23	.40	.31
CEEB Math	.20	.42	.40	.34	.34	.52	.48	.02	.33		.36	.15	.27	.34	.41
High School I.Q.	.02	.31	.35	.25	.26	.38	.40	-.05	.31	.36		.13	.22	.24	.24
High School Q.P.A.	.08	.22	.24	.06	.08	.20	.19	-.07	.20	.15	.13		.24	.42	.26
Human Behavior I	.04	.27	.23	.22	.21	.28	.25	-.02	.23	.27	.22	.24		.40	.26
Statistics Test I	.08	.42	.36	.09	.07	.33	.30	.01	.40	.34	.24	.42	.40		.48
Statistics Test II	.18	.21	.25	.04	.05	.21	.17	.17	.31	.41	.24	.26	.26	.48	

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APPENDIX D

ANECDOTAL RECORD OF BEHAVIOR TOWARD USE OF PROGRAMMED MATERIALS

BEHAVIOR PAGE

ADMINISTRATOR 95

PARENT 100

STUDENT 101

TEACHER 111

RECORD OF BEHAVIOR

INTRODUCTION

This appendix has been designed to be the repository of those items which were selected from the anecdotal (diary) records which the two research assistants accumulated during their day to day work among the high schools that participated in the project. These were selected from a large accumulation of incidents, statements, and thoughts which were recorded as they arose because the respective research assistant believed them to be significant in the behavior(s) and/or attitudes(s) which they revealed.

ADMINISTRATOR BEHAVIOR

Cooperation of school administrators throughout the school year was excellent. They were highly interested in any benefits which their students would receive by participating in this project. Initially, they indicated some apprehension concerning any unfavorable comparisons of students from any one school with students from another school. As the purpose of the project became more clearly delineated and as their own interest became aroused, this apprehension disappeared. This project enabled school administrators to become more familiar with programmed materials and their usefulness to the learning process. They, individually and as a group, thought the project very worthwhile and expressed a desire to have another project during the coming school year. A few instances of individual administrative behavior about their interest and concern follow.

When the project began, the principal of each school was asked to select a member of his staff who would act as a liaison person throughout the project. This person would administer tests, furnish student information, answer correspondence, and assist students. One principal changed this because he thought the work load of his staff was heavy enough and that anyone selected for this extra responsibility would be paid accordingly. Test administration in this school was eventually handled by the principal's secretary.

During conversation with one supervising principal, he informed the writer that he would have liked to see the project extended into the junior high school.

During the course of the project, the interest of the principal became so keenly aroused that he stated a desire to offer programmed instruction to his students on an elective basis. In this school the students would have a variety of programs from which to make a selection. Work on the programs would be done in a scheduled period during the school day under teacher supervision.

Some school principals have expressed concern over their student's lack of progress. They arranged to have their guidance counselors meet with the students as a means of encouraging them to exert greater effort.

One school had identified only twelve students for selection as possible participants in the project because they were apprehensive of unfavorable comparisons with students from other schools. Consequently only the names of their most academically talented students were submitted for consideration.

In one school a part of the initial instructions were ignored, and students had already been contacted and informed of their possible selection as participants in our project before the project staff had approved. Students had been told by the school authorities and had been instructed to discuss it with their parents. The school administrators later agreed to expand their possible list of participants when they were reminded that the project staff should make the final selection of students.

One high school principal decided that he would serve as our liaison person in his school. This was a very small high school, 363 students grades 7 - 12, and the principal also served as guidance counselor. He based his decision on the fact that all of his teachers had full schedules.

A number of requests for permission to include students from grades other than 10, 11, and 12 were received from several high schools. In such cases administrators were informed it would violate the project's proposal.

One particular example of this type of behavior occurred when one administrator requested the inclusion of some ninth grade students. He was informed that he could have an extra copy of the program to be used in his office and that there was nothing wrong with his working with these students if he so desired. His findings with these students would not be included in the project report, and the research director would be unable to serve the ninth grade pupils.

Several administrators wanted to include students of average ability in this project. They expressed concern over the limited amount of time available to the superior student because of his heavy academic load and because of his involvement in co-curricular activities. They felt that the average student had more time for extra class work.

One administrator spoke of his own son as an example of the time factor involved. He said he would think twice about permitting his son to take part in a project such as this one. He said the boy had two study halls a week and played football and basketball. He had to start his studies as soon as he finished his supper, and when he finished, it was time for bed. He said he thought a youngster needed some time for relaxation.

Members of the project staff honored several requests during the school year to attend in-service meetings at a number of project schools. At such times they discussed the project. This served to orient the teachers with respect to the workings of the project, counteracted a lack of initial orientation, and aided in the dissemination of the project.

One liaison person, worried that students would come to him with questions on statistics which he could not answer, wanted to know whether he could refer students to the math teachers. He called the math teachers together and explained his situation. They assured him of their cooperation on the matter.

The problem of students dropping from the project caused one principal to express concern that this might start a trend that others would follow. He wanted someone on the project staff to talk to his potential drop outs. He was told that no one would be forced to remain in the program who did not want to do so. It was explained to him that this was a demonstration project, and the staff was only observing what would happen when these superior students in small rural high schools were given these programmed materials. If any student wished to drop out of the project, this was to be considered a part of student behavior.

The progress of the students in completing their programs was a concern stated by some administrators. This caused one administrator to react in the following manner. Not one of the project students in his school had taken a test. He called them together and told them to be ready to take their initial test the next day. This caused many of the students to consider dropping out of the project. The condition was alleviated when the research assistant assured them that this would not happen again.

Participation in our project caused one principal to reflect upon various aspects of his own school program. Some of the points he discussed were:

1. Are our superior students really superior?
2. Are we grading too easy?
3. Are our students with ability being challenged?
4. Do we have enough supervision?

Another principal was exploring the possibility of using programmed materials as a supplement to his regular class schedule. His school was in the "very small" category, 122 students in grades 10, 11, and 12. This small number did not lend itself to grouping. In this school there was only one senior English class, and students were in a heterogeneous group. As a direct result of their participation in the project, the administration has become interested in the possible use of programmed materials both as a developmental function and as a remedial function within the framework of the regular class schedule. The project staff gave them a number of programs for examination. Reference has also been made to the United States Department of Health, Education, and Welfare Office of Education Publication, Programs, '63, as an up-to-date guide to programmed instructional materials available to educators.

During the course of the project year, there were several administrators who expressed an interest in the possible use of program materials as a basis for summer school instruction. The project also stimulated the use of programmed materials in the instruction of homebound pupils in two of the cooperating high schools.

PARENT BEHAVIOR

It was very difficult to determine the attitude and behavior of parents toward the project because there was very little contact between project personnel and parents. The reaction which was received indicated that the parental attitude toward the project varied widely.

An organization of parents at one school showed a high degree of interest at the beginning of the project and asked the research assistant to speak to them about the project at one of their meetings. Many interested parents attended.

One girl stated that her lack of progress was due to laziness. She also said, "My mother and father find the experiment interesting and nag at me to work on it."

When asked what her parents thought of the program, one girl replied that they were not much interested.

One father told his son that he wanted him to finish the course in Human Behavior. In his opinion, there were many aspects of the course that would provide him with valuable knowledge. He offered his son $10.00 if he completed the program. Before the school year had ended, the father had also completed the program.

In direct contrast to the above reaction, one parent hid the program from his child. This parent wanted complete concentration on the regular class schedule and insisted that class grades be kept at a high level. When the case was checked, it was found that the grades were very good and had not dropped since participation in the program had begun.

STUDENT BEHAVIOR

The greatest factor which affected student progress throughout the school year was believed by students to be a lack of time. They repeatedly said that there was not enough time for them to work as much as they wanted. This lack of time was due primarily to pressure of other schoolwork and to participation in extra-curricular activities and sports. During any time remaining at the end of the day, many students were too fatigued or lacked sufficient drive or motivation to work on programmed materials. During any extra available time for study, students preferred to study their schoolwork in order to earn a better grade. In some cases, a few students lost interest in the project. After the superior students in each school had been identified, a meeting was held for the purpose of explaining the project to them. At this meeting the following questions were typical of those asked by the students:

1. How much time will this require?
2. Will I have to work on this every day?
3. What happens if I volunteer for the project and am unable to complete the work?
4. Will I have to work on both programs?
5. Will I receive any credit for this work?

Students at one school expressed concern at the orientation meeting that they would be given grades for their work. They seemed relieved to hear that no grades were involved.

One student lost interest during the first semester while studying Statistics and decided to drop out of the project. When she learned that the second course was Human Behavior, she renewed her interest and decided to stay in the project.

One girl said she was not particularly interested in Statistics or math, but she did not want to be left out of the Humanities Program planned for the second semester.

One student stated that "... working on programmed materials for 30 minutes ... was enough".

Students in general said that programmed material was "rough", but they were able to understand it if they stayed on the job.

One student, when asked how she liked programmed instruction, replied that it was fun and different.

It was found that the seniors in one of the schools were exerting pressure on other members of the senior class who were ready to take their first test. They were trying to persuade them not to take the test and make them look bad or put the pressure on them to exert more effort on the program.

Students at one high school were apprehensive about seeing the research assistant face to face. They exhibited a guilt complex because of their slow progress in completion of the program.

A few of the students expressed a desire to drop from the project and become a part of the population of another project, the Talented Youth Program. They were informed that, if they dropped out of this project, they would not be considered for selection in the Talented Youth Project. They all then decided to remain in this project.

One of the students indicated that one of his teachers and the research assistant made him feel guilty about his lack of satisfactory progress. He said that some of his teachers called him lazy.

One student requested an English program to be used as a "refresher" course throughout the summer prior to college entry. He also wanted to know if it would be possible for him to have an appointment with the project director. He wanted to talk to him and personally thank him for being afforded the opportunity to participate in the program this year.

One of the project students, whose father had taken his program away, requested the use of the program for the summer. He wanted to complete the program. The student indicated it was not his habit to fail to finish what he had begun.

In one particular school student interest in the second program was high. Six additional students requested permission to enter the program. They were accommodated because some students had dropped out during the first semester.

In one high school several students asked permission to keep their copies of Human Behavior after the close of the school year. They were hoping to have some time to work on them. Permission was granted.

A variety of quotations which students expressed follow:

1. "I get bored doing it (Statistics) and it doesn't interest me very much. Its hard to concentrate on the material, but you need to concentrate to learn it."
2. "I like the programmed learning, but I hate math. My parents don't think I spend enough time on it."
3. "I find that I am becoming uninterested in the statistical part of the course. I think that it would be more interesting to me if I could see a definite application to it or if there was a different course that would appeal."
4. One student's reaction to Human Behavior: "Material is harder than Statistics." She thought that being able to write in the book was helpful; she also liked the review at the end of each chapter. After completing chapter eleven, she enthusiastically said, "I like it!"
5. "It is interesting to me but not more interesting than my regular homework. It is sometimes a little difficult to fully understand."
6. "The material (Statistics) is easy to work on, but I don't enjoy it as much as I thought I would. Its too easy to find challenging."
7. "I enjoy working with it, since it offers new material to

learn. I feel as if I'm under a little pressure, though, as to keeping up with the other students and finishing in time. But, I don't regret taking it."

8. "I have found this interesting because it is a new field of mathematics. I enjoyed working on it when I don't have other things to do, but if I have other things that have to be done, I find myself pushing this aside and not even thinking about it."

9. "I wish that there was more time for the course. My work is rather slow, and my teachers told me not to be involved in so many extra-curricular activities. Actually, the course is interesting if one has the time to really dig in."

10. "I enjoy doing it, but I never seem to have enough time to do it. I have been having quite a bit of homework, and sometimes I forget about it."

11. "I like ordinary teaching better because each day you're in the class about 45 minutes, and the teacher gives out homework that you have to do, and I think I could learn more through ordinary teaching."

12. "I like Human Behavior much more than statistics because it is easier to understand, and much of it is just common sense."

13. "I think that the material is presented in an excellent manner, however, more space should be provided for the responses. I think that the subject is very interesting and that the program is definitely worthwhile."

14. "Programmed instruction is better than regular teaching because

you can work at your own speed and don't have to worry about homework."

15. "I like it even though sometimes it is hard to find time to work on it."

16. "I like the course very much. One can study the course at his own speed. This way he doesn't get bored as he might in class by going too slow. Neither would he get confused by the material being covered too fast, as might be done in class. The information is reviewed several times and makes one less likely to forget it. One can easily understand the relationships in the information as it is developed."

17. "I very much enjoy Human Behavior. I think it has more immediate practical applications than did statistics. It would help if there were a slide to cover the answers and more room to write the answers."

18. "First time I've had a math course I like."

19. "Vocabulary is difficult. Material (Human Behavior) requires a lot of concentration. Blanks and print are too small."

20. "I like it, but I just can't seem to find enough time for it. What I have done has been challenging, and I like the challenge. If I could find more time I would get more out of it." (This comment concerning time occurred frequently.)

21. "I think it is easier to study this way."

22. "I think this way of learning is good. It is fairly easy. Sometimes I don't feel like sitting down and studying it, but after I start, I like to keep going. It is very interesting."

23. "The only fault in the program I find is myself. I don't seem to be able to make myself work. The program seems to present the material in a way that is easy to understand."

24. "I think this teaching method could be used for students of high intelligence or ones with a great amount of initiative. For general use I do not think it would work. I know that I have learned a great deal from it. I am glad that I chose to enter this course since I believe it will help me in my college years."

25. "I am very interested in the course and it's subject matter, but I am finding it hard to set aside a certain portion of time to work on the course at a good pace."

26. "I think that this course in statistics is interesting, and I really enjoy doing it -- when I have the time! I find that, although I sometimes consume a lot of time, I do not always have the time because of extra-curricular activities and the many assignments in my other courses."

27. "It is a pleasant change and interesting."

28. "At first I thought it would be too much work along with my regular studies, but I have found this not to be true."

29. "I think it is harder to work on your own than with a teacher telling you what to do. But this way of studying should help prepare us for college."

30. "My regular classes at times seem so boring; but there is a teacher to push you and a class to compete with."

31. "Its hard to find time to do it, but it's easier if you set a

goal for each day and try to stick to it. With no pressures of supervision, it's easier to learn."

32. "The course is helping me in my algebra, especially the part about graphing."

33. "Although statistics is not something that I am vitally interested in, I try to keep working at it because I think it will benefit me in college."

34. "I enjoy this statistics course by programmed materials because it presents a challenge to me of seeing what I can accomplish on my own."

35. "This statistics study holds no interest for me. The only time I ever work on it, which is, as you can see, very seldom, is when I start feeling guilty about not doing more."

36. "I do not prefer this course to regular classroom courses because I would rather ask questions."

37. "I only wish I could keep at it regularly. This is my fault, however. It is not the program."

38. "Individual study of this type outranks by far regular classroom work where a person has to review when he may not need to and may need to when the class doesn't."

39. "In order to absorb the material I have to discipline my concentration more than in doing regular homework which, in our school, is mostly busywork."

40. "The biggest advantages of the program, I feel are these:

    (1) I can learn self discipline and individual thinking, both of which are lacking in our regular program.

(2) I am my own teacher. I don't have to endure a non-thought-provoking teacher who teaches a dull class. If it's dull working on the program, it's my own fault."

41. "In order to learn anything from these programmed materials, I have to have the right atmosphere to study. It's not like a lot of school work which you can do without complete concentration."

42. "This way of studying would be easier for me if it was in a classroom where a question could immediately be answered."

43. "In the classroom you have to move with the group. In self-instruction you can move at your own speed."

44. "I find this very effective. I think it is a great way to teach, but I think classroom drill is still the best for me."

45. "Many teachers will be happy to hear my comments, for I feel nothing can replace their teaching."

46. "It seems hard to study when it is hard to see the applications of the knowledge."

47. "It is a good way to get in needed courses, and it would make for good refresher courses."

48. "I found I had a very good start, but I have lost some of the enthusiasm that I had formerly held. Proper motivation may be the answer."

49. "I like going at my own speed rather than slowing down for someone else."

50. "I am rather surprised at how easy it is and how much I have learned. I kind of thought at first that I would learn very

little because I wondered what there was to reading a few sentences and filling in some blanks."

51. "Trying to keep up other grades seems only to allow time to work on this over the weekend."

52. "My parents feel this course will prove helpful if I can find time to do it along with my regular studies."

53. "I think it would work better if we had a special period to do it with a supervisor looking over us."

54. "Every time my mother screams,' Work on your project from the college,' I work furiously for twenty minutes."

55. "I find it takes very little of my time as compared to the benefit I receive from it."

56. "I really don't see how this course is going to be helpful unless we go into the field of statistics."

57. "I really like this method. Sometimes, when I am mad at the teachers, I wish all my courses were taught in this manner."

58. "When I do try to work on my program during the week, I make sure I've finished my regular homework because I get so involved in it I tend to forget my regular studies."

59. "I have found things in my school studies and college board test that I did relate back to the programmed materials studied."

Many students found that if there was any time lapse between study sessions on the statistics, they had to spend time in review to regain the concept they were dealing with at that time.

Students felt that it would have been a help if they had been able to have written in the programs.

TEACHER BEHAVIOR

Guidance counselors and teachers who served as liaison personnel during the project gave their wholehearted cooperation and assistance. They were highly interested in their students' progress and became quite concerned when this progress was less than anticipated. In general, they felt that our project should include more motivation for the student. They felt that many students were unable to provide their own motivation. Following are a few instances of their attitudes:

A dropout in one school made room for a replacement. This change was made by the guidance counselor and was satisfactory to the members of the project staff.

The guidance counselor for one particular school had a meeting with his project students and tried to encourage them. Results of this meeting were:

1. Students would like a choice of subject matter.
2. Many students felt that English would be more appealing.
3. There was a general lack of interest in math.

Several liaison persons have mentioned that they thought more motivation should be included in a program such as this . This motivation could have been something as simple as a luncheon for the participating students.

Many of the teachers who were not directly involved with the project in the cooperating schools did not really understand what the aims (objectives) of the project were. This became apparent as the project progressed, and occasional conversations were held with these teachers. It was difficult for many of them to distinguish between an experimental research study and a demonstration study.

There were instances of growing interest in the use of programmed materials which the following situations seem to substantiate:

1. A number of teachers requested the use of one or more of the programs for their own personal use.
2. Some believed the programs would be helpful in their own graduate studies.
3. Others wanted to orient themselves with the particular programs being used in order to be able to speak intelligently to the project students who came to them with questions.
4. Requests came from teachers whose children were not a part of our project population. They wanted access to the programs so that their children would have an opportunity to acquaint themselves with this type of self study material.

Innovation, or change, does not take place over night in education. This has been a fact in the history of American education. There were instances of resistance to innovation as the project progressed through the course of the school year. One teacher stated, "It will never work. Students will not accomplish or learn anything when they are permitted to work wholly on their own and when they are not supervised."

Another said, "It takes many more volumes of programmed materials to teach a subject than does a course with an ordinary textbook. This makes it impractical."